EXPRESS5800/A1160

Software Installation and Configuration Guide

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PN: 456-01806-000 **December, 2008**

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Using This Guide

This guide contains information that helps you install software and configure your Express5800/A1160 system.

Who Should Use This Guide

This guide is intended for system administrators who make the Express5800/A1160 system software installation.

Symbols and Conventions

This guide uses the following text conventions and graphic symbols.

Warnings, cautions, and notes have the following meanings:

WARNING

Warnings alert you to situations that could result in serious personal injury or loss of life.

CAUTION

Cautions indicate situations that can damage the system hardware or software.

Note: Notes give important information about the material being described.

- Names of keyboard keys are printed as they appear on the keyboard. For example, **Ctrl**, **Alt**, or **Enter**.
- Text or keystrokes that you enter appear as boldface type. For example, type **abc123** and press **ENTER**.
- File names are printed in uppercase letters. For example, AUTOEXEC.BAT.

Related Documents

In addition to this guide, the following system documentation is useful.

- *NECCare™ Guide*
  The NECCare Guide contains information about NEC's warranty and server registration.

Section 1

Introduction to Installing Software and Configuring the System

Use the information in this and the subsequent sections to install or reinstall partition software, and to complete the integration of your Express5800/A1160 system into your server network environment.

The procedures in this guide are intended to be completed in the order that they are presented.

If you are performing a new system software installation and configuration, this is the third document in the Express5800/A1160 system installation series of documents.

The software installation and system configuration process outlined by this guide requires you to:

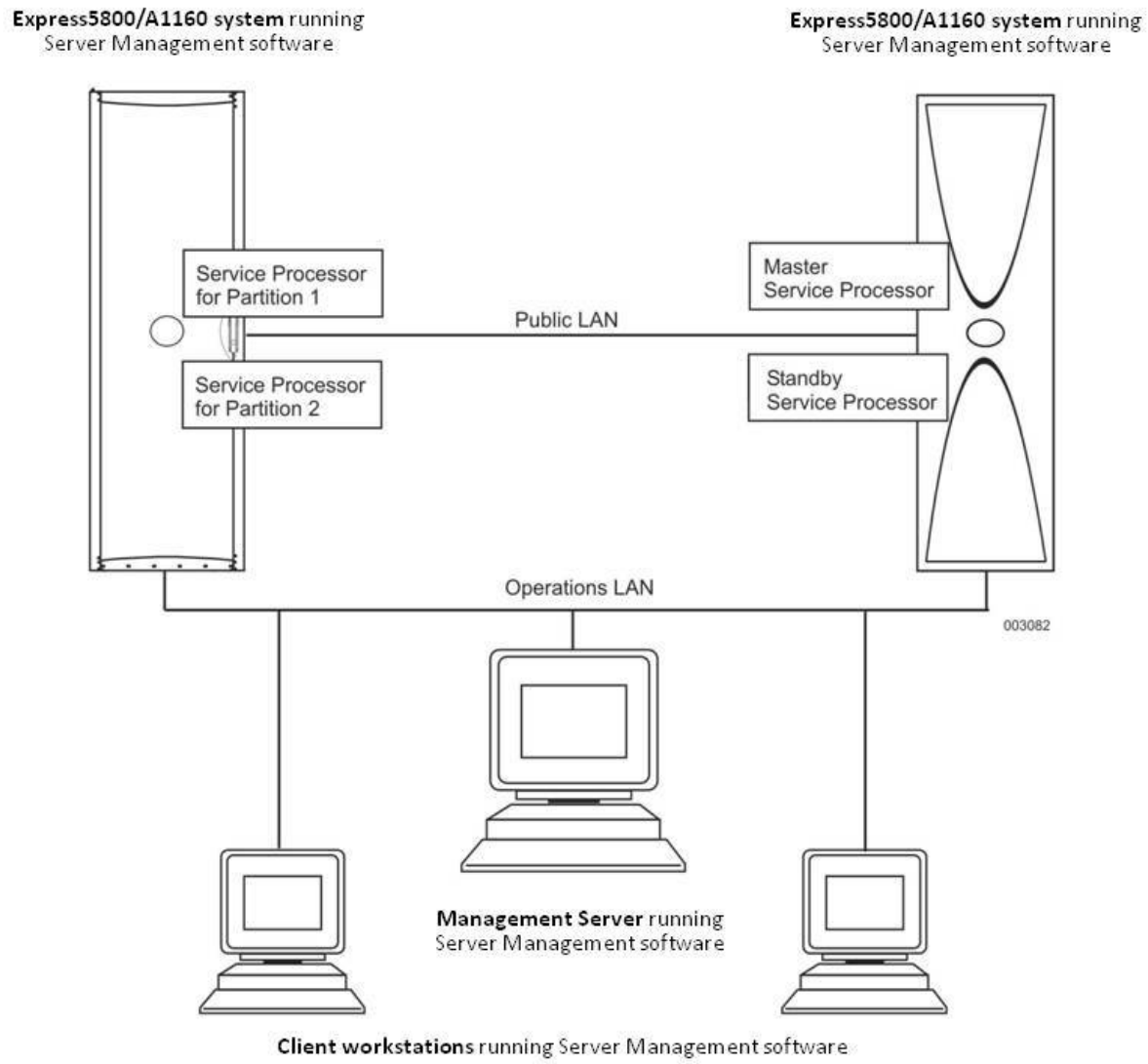
- Meet and complete prerequisites
- Install and configure operating system software
  - Windows Server 2003 R2 (Standard, Enterprise, or Datacenter editions)
  - Windows Server 2008 (Enterprise or Datacenter editions)
  - Red Hat Linux version 5.2
  - SUSE Linux version 10 SP2
  - VMware ESX Server version 3.5
- Install ESMPRO Agent
- Configure the system
- Verify system readiness

If you are reinstalling a partition in your system, this is the primary document for your needs. In the Express5800/A1160 system environment, reinstalling a partition follows a similar process to an initial partition installation and configuration, but with different prerequisites. Refer to 2.4 Prerequisites for a Partition Reinstallation for additional partition reinstallation information.

1.1. Network Architecture

The following figure shows the communication between hardware components running

Server Management software.



For more information about network configuration, see the *System Planning Guide*.

1.2. System Components

The installation and configuration instructions in this guide refer to the following system components:

Cells

A cell contains the physical resources of the system: instruction processors, memory, input/output devices, peripheral storage devices, management board, fans, power supplies, control panel, and so on. Each system comprises one to four cells.

Maintenance LAN (MLAN)

The maintenance LAN (MLAN) connects the internal components of the system.

Partition

A partition is a combination of one to four cells that runs a single instance of an operating system or virtual machine monitor. The operating system can be Red Hat Linux, SUSE Linux, or any supported Windows operating system. The virtual machine monitor can be VMware ESX or Xen.

A system comprises a minimum of one and a maximum of four partitions.

Service Processor

Each cell has an internal management board. For each partition, one of the partition management boards serves as the Service Processor. (Other management boards in the partition are called satellite management controllers.) A Service Processor manages and maintains the partition, monitors the system for hardware problems, and allows you to repartition the system. The management firmware for the system resides on flash memory on the management board and provides the Service Processor functionality. The management board also includes the BIOS and Console Manager firmware.

1.3. Documentation Updates

This document contains all the information that was available at the time of publication. The latest version of the document may be found in the Product Support Web Site:

http://support.necam.com/servers/Enterprise/

Section 2

Preparing for System Configuration

This section contains prerequisites and requirements for installing or reinstalling software on a partition.

2.1. Required Media

Ensure that the following media is available for your installation.

2.1.1. Required Media for Installing a Windows Server 2003 Operating System

The following media are required for installing a Windows Server 2003 partition operating system:

- Utility CD Media
- One of the following operating system media:
  - *Microsoft® Windows Server™ 2003 R2, 32-bit Standard Edition* CD-ROM
  - *Microsoft® Windows Server™ 2003 R2, 32-bit Enterprise Edition* CD-ROM
  - *Microsoft® Windows Server™ 2003 R2, 32-bit Datacenter Edition* CD-ROM
  - *Microsoft® Windows Server™ 2003 R2, Standard x64 Edition* CD-ROM
  - *Microsoft® Windows Server™ 2003 R2, Enterprise x64 Edition* CD-ROM
  - *Microsoft® Windows Server™ 2003 R2, Datacenter x64 Edition* CD-ROM
- Product key – this can be found on the Certificate of Authenticity (COA) sticker that is supplied with your operating system media.

  Note: *If you are reinstalling the Windows operating system, locate the COA where it was affixed to the server during the initial software installation.*
- Microsoft hotfixes and antivirus software are provided by the customer.

2.1.2. Required Media for Installing a Windows Server 2008 Operating System

The following media are required for installing a Windows Server 2008 partition operating system:

- Utility CD Media
- One of the following operating system media:
  - *Windows Server 2008 x64, Enterprise Edition DVD*
  - *Windows Server 2008 x64, Datacenter Edition DVD*
- Product key – this can be found on the Certificate of Authenticity (COA) sticker that is supplied with your operating system media.

  Note: *If you are reinstalling the Windows operating system, locate the COA where it was affixed to the server during the initial software installation.*
- Microsoft hotfixes and antivirus software provided by the customer.

2.1.3. Required Media for Installing Red Hat Linux 5.2

The following media are required for installing a Red Hat Linux partition operating system:

- Utility CD Media
- Red Hat Enterprise LINUX 5.2 CD-ROM or DVD.
- Antivirus software is provided by the customer.

2.1.4. Required Media for Installing SUSE Linux 10 SP2

The following media are required for installing a SUSE LINUX Enterprise Server 10 Service Pack 2 partition operating system:

- Utility CD Media
- SUSE LINUX Enterprise Server 10 Service Pack 2 CD-ROM or DVD
- Antivirus software is provided by the customer.

2.1.5. Required Media for Installing VMware ESX Server 3.5

The following media are required for installing a VMware ESX Server 3.5 hypervisor software on the partition:

- Utility CD Media
- VMware ESX Server 3.5 software, which is available from the VMware Web site (www.vmware.com)

- VMware Infrastructure documentation, which can be accessed from the VMware Infrastructure 3 Online Library at the following URL: https://www.vmware.com/support/pubs/vi_pubs.html
- Antivirus software is provided by the customer.

2.2. Accessing Partitions During Software Installation and Configuration

When performing the procedures in this document, choose the method appropriate for your system state to access a partition:

- Access the partition from a keyboard, video, and mouse either directly connected to the partition, or connected indirectly through a KVM switch.
- Use the remote console Web pages to control and monitor the basic functions for the individual partition component.

  To access the remote console Web pages for a partition

  1. Type the maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

     Note: *The MLAN address can be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

     A log-on dialog box appears.

  2. Type a valid user name and password, and click Log On.

     Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

     Management firmware authenticates the credentials before displaying the requested Web interface. The **Summary** page is displayed.

2.3. Prerequisites for a New System Installation

This topic details the prerequisites for performing a new Express5800/A1160 system installation.

Once you ensure all of the prerequisites for installation are met, continue to the section for the partition operating system you intend to install.

System Readiness

Ensure the following system conditions are met before performing the procedures in this document:

- You completed the procedures in the preceding installation documents:
  - *Hardware Installation Guide*
  - *ESMPRO Manager User's Guide*

    The procedures in this guide must be completed if you needed to install, configure, or upgrade the management server in your server network environment.
- System cables are attached to the partitions and Service Processors and are routed, though not connected, to your network.
- The firewall is in place for a LAN network without a dedicated operations LAN.
- The system partitions are powered on.

Connecting the System to the Operations LAN or Public LAN

If your system met the preceding conditions, connect the system to the dedicated operations LAN or public LAN at this time. Refer to the illustrations provided.

⚠Caution

If you are installing multiple Express5800/A1160 systems and intend for them to reside on the same LAN segment, connect only one system undergoing installation to the network at this time. All Express5800/A1160 systems have the same default Service Processor IP address when they are shipped from the factory.

Having multiple systems with the default Service Processor IP address active on the same LAN segment causes errors during the software installation and system configuration process detailed in this document.

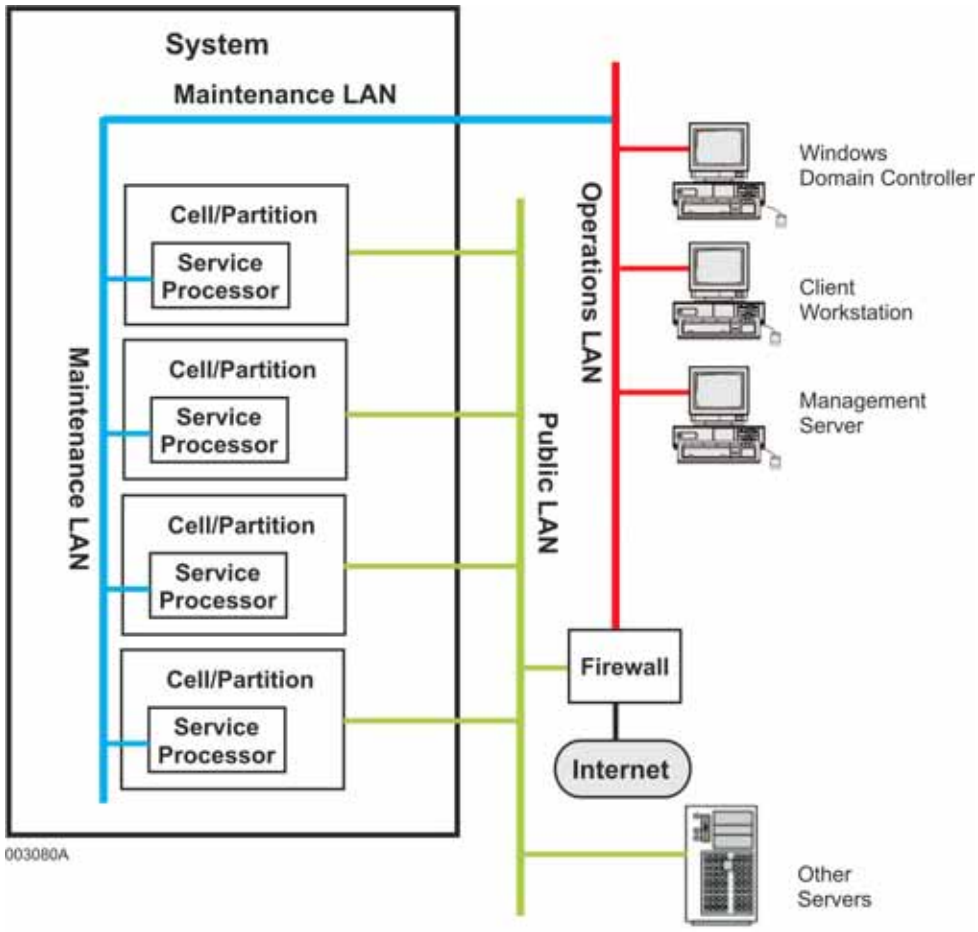


Figure 2-1 Network With Dedicated Operations LAN

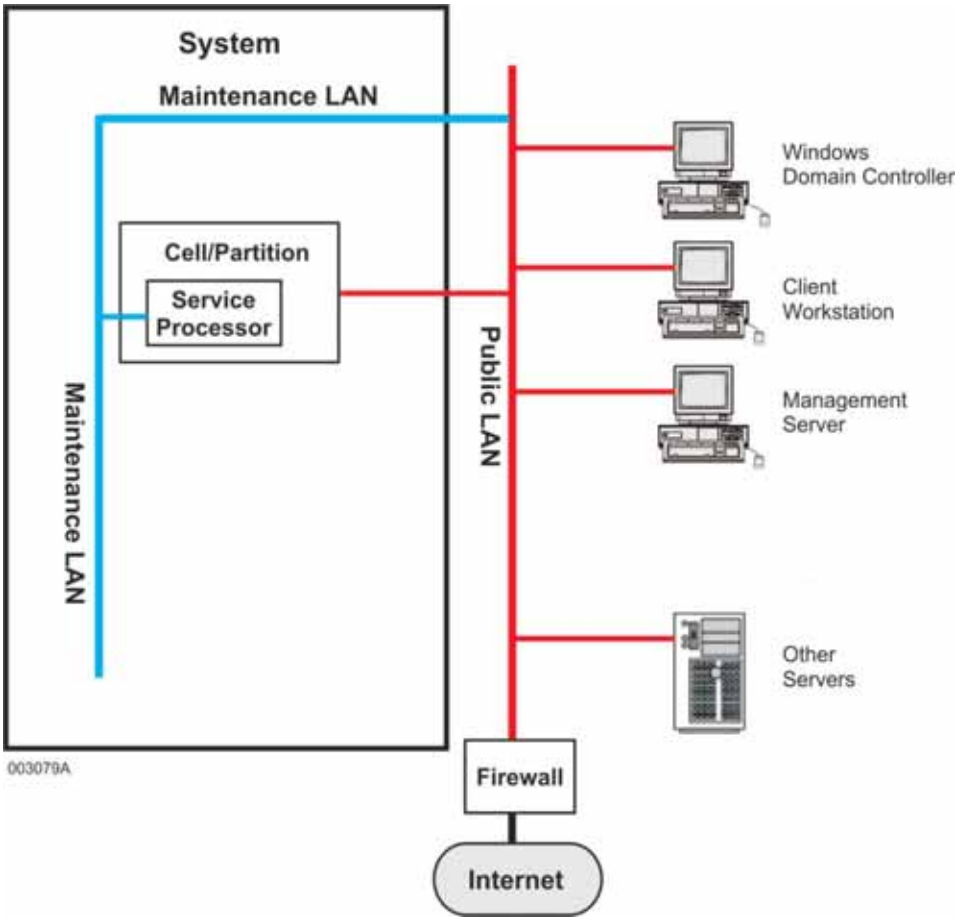


Figure 2-2 Network Without Dedicated Operations LAN

Configuring the BIOS for a New Partition Installation

Perform the steps in B.2 Configuring BIOS Before Installing a Different Operating System On Partition on each partition that you intend to install operating system software.

Note: *If you are installing Windows Server 2003 R2 x64, the BIOS is already set to the defaults needed for that operating system, and you can skip this procedure.*

Configure the BIOS for External Boot

If you want to boot from one or more external drives, perform the steps in B.1 Configuring Partitions for External Boot Capability (Optional).

2.4. Prerequisites for a Partition Reinstallation

If you want to reinstall your server operating system or change to a different server operating system, perform the procedures in Appendix B Preparing for Partition Reinstallation, before continuing to the section for the partition operating system you intend to install. Then, continue through the rest of this guide as you would do for a new system installation.

Section 3

Windows Server 2003 Partition Installation and Configuration

This section includes installation and configuration information for partitions intended to run a Windows Server 2003 operating system.

3.1. Installing the Operating System on a Partition

1. Insert the operating system media appropriate for your system into the partition CD/DVD drive.
2. Access the partition remote console Web pages:
   a. Type the current maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

      Note: *The current MLAN address is the IP address that you specified for the partition Service Processor setup. The MLAN address can also be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

      A log-on dialog box appears.

   b. Type a valid user name and password, and click **Log On**.

      Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

      Management firmware authenticates the credentials before displaying the requested remote console interface. The **Summary** page is displayed.
3. Click **Power Up/Down** to start the partition.

   A partition status window is displayed.
4. To view the partition desktop in on the same monitor display, perform the following steps:
   a. Click **Remote KVMS**.

      The **Keyboard Video Mouse Storage (KVMS) Redirection** page is displayed.

   b. Select a viewer option.

      Note: *If you are using the Firefox browser, select the Java client JViewer only.*

      For an initial use of the client viewer, you might need to install plug-ins or accept licenses to run the viewer.

The viewer window displays the partition desktop.

5. If you are reinstalling the partition operating system on a partition that previously booted from an external boot adapter, and you intend to boot from an internal boot adapter after this reinstallation, press any key to initiate the partition BIOS, then complete the procedures in Appendix C Configuring Internal Adapters (Partition Reinstallation Only), to configure the RAID adapter, as needed.

   Note: *For new installations, booting from the internal boot adapter is the default configuration, and the internal boot adapter should already be configured at the factory.*

6. Your system should be booting into the operating system setup environment from the CD/DVD media.

   Note: *If your partition did not boot using the* operating system *media, then reset the partition BIOS boot priority to set the CD/DVD drive as the initial boot device:*

   a. Restart the partition to access the BIOS and press ***Enter***

   b. Select ***Boot Maintenance Manager*** *and press* ***Enter****.*

   c. Select ***Boot Options*** *and press* ***Enter***

   d. Select ***Change Boot Order*** *and press* ***Enter***

   e. Press ***Enter*** *while the boot order entries are selected.*

   f. Select ***<Primary Slave CDROM>*** *and use the* ***+*** *key to move the selection to the top of the list. Then press* ***Enter****.*

   g. Select ***Apply Changes****, and press* ***Enter****.*

   h. Press ***Esc*** *to exit to the main BIOS screen.*

   i. Select ***Continue*** *and press* ***Enter*** *to continue the boot process.*

   The operating system installation starts.

   Notes:

   - *You must accept the operating system end-user-license agreement.*
   - *Once the operating system is available, eject the media to prevent a reboot to the CD-ROM.*

   At the end of the installation, you are logged on to the system as the administrator.

3.2. Attaching Certificate of Authenticity to Server

Refer to the Certificate of Authenticity (COA) instructions included on the notice that arrived with the Windows media to attach the COA to the server.

3.3. Installing Microsoft Hotfixes and Virus Protection Software

Install the customer-supplied Microsoft hotfixes and virus protection software on this partition at this time.

3.4. Configuring Internet Explorer Options

Perform these steps to set the Internet Explorer options required for Server Management software installation:

1. Launch Internet Explorer.
2. From Internet Explorer, click **Internet Options** on the **Tools** menu.

   The **Internet Options** dialog box appears.
3. Select the **Advanced** tab.
4. Scroll down, and under **Security**, select the **Allow active content from CDs to run on My Computer** check box.
5. Select the **Privacy** tab and verify that the **Block Pop-ups** check box under **Pop-up Blocker** is cleared.
6. Click **OK** to save these settings.

3.5. Installing ESMPRO Agent

Perform the following steps to install the Server Management software.

Notes:

- *Ensure that Internet Explorer is configured to allow active content from CDs to run.*

  Ensure that the pop-up blocker is disabled.

  These options are available from the Internet Options dialog box, on the Advanced and Privacy tabs, respectively. See the Internet Explorer Help for more information on how to configure these settings.
- *If prompted, select the option to allow blocked content.*

1. Use the *Utility CD* media to access the Server Utility. To manually launch the Server Utility, double-click the following file:

   ```
   (CD/DVD drive):¥mc.vbs
   ```

   Note: *As a result of Windows security, you must install this software directly from a CD-ROM or from a local drive; you cannot install the software from a network share*

or a mapped drive.

The **OS Select** dialog box is displayed.

Figure 3-1 OS Select Dialog Box

2. Type **2** or **3** depending on the type of the operating system running on the partition, and click **OK**.

   Master Control Menu is displayed.

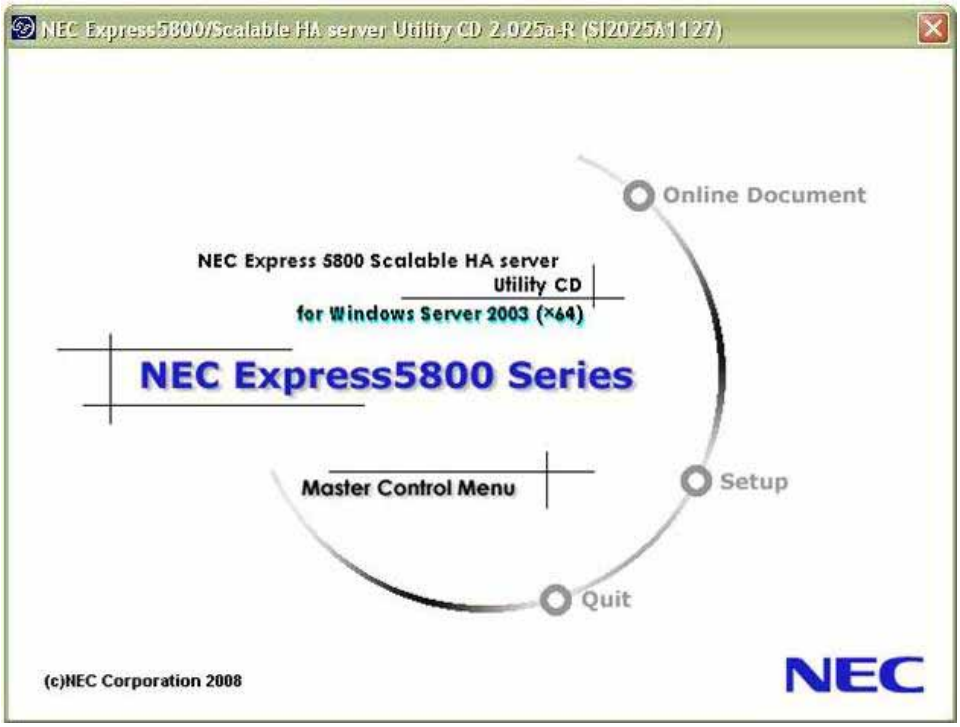


Figure 3-2 Master Control Menu Window for Windows Server 2003

3. Click **Setup**, and then click **NEC ESMPRO** on the pull down menu.

   ESMPRO setup window is displayed.

Figure 3-3 ESMPRO Setup Window

4. Click **Agent**.

   Installation starts.

5. When the installation is complete, click **Finished**, and click **End** on the **ESMPRO Setup Window** to close the setup program.

6. If you are prompted to reboot, click **Yes**.

3.6. Where To Go Next

If you have additional partitions to install and configure, refer to the section for the partition operating system you intend to install.

If you have completed software installation and configuration for all partitions and you are ready to finalize your system configuration, proceed to Section 8 Completing System Configuration.

Section 4

Windows Server 2008 Partition Installation and Configuration

This section includes installation and configuration information for partitions intended to run a Windows Server 2003 operating system.

4.1. Installing the Operating System on a Partition

1. Insert the operating system media appropriate for your system into the partition CD/DVD drive.
2. Access the partition remote console Web pages:
   a. Type the current maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

      Note: *The current MLAN address is the IP address that you specified for the partition Service Processor setup. The MLAN address can also be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

      A log-on dialog box appears.

   b. Type a valid user name and password, and click **Log On**.

      Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

      Management firmware authenticates the credentials before displaying the requested remote console interface. The **Summary** page is displayed.
3. Click **Power Up/Down** to start the partition.

   A partition status window is displayed.
4. To view the partition desktop in on the same monitor display, perform the following steps:
   a. Click **Remote KVMS**.

      The **Keyboard Video Mouse Storage (KVMS) Redirection** page is displayed.

   b. Select a viewer option.

      Note: *If you are using the Firefox browser, select the Java client JViewer only.*

      For an initial use of the client viewer, you might need to install plug-ins or accept licenses to run the viewer.

The viewer window displays the partition desktop.

5. If you are reinstalling the partition operating system on a partition that previously booted from an external boot adapter, and you intend to boot from an internal boot adapter after this reinstallation, press any key to initiate the partition BIOS, then complete the procedures in Appendix C Configuring Internal Adapters (Partition Reinstallation Only), to configure the RAID adapter, as needed.

   Note: *For new installations, booting from the internal boot adapter is the default configuration, and the internal boot adapter should already be configured at the factory.*

6. Your system should be booting into the operating system setup environment from the CD/DVD media.

   Note: *If your partition did not boot using the* operating system *media, then reset the partition BIOS boot priority to set the CD/DVD drive as the initial boot device:*

   *a. Restart the partition to access the BIOS and press **Enter***

   *b. Select **Boot Maintenance Manager** and press **Enter**.*

   *c. Select **Boot Options** and press **Enter***

   *d. Select **Change Boot Order** and press **Enter***

   *e. Press **Enter** while the boot order entries are selected.*

   *f. Select **<Primary Slave CDROM>** and use the **+** key to move the selection to the top of the list. Then press **Enter**.*

   *g. Select **Apply Changes**, and press **Enter**.*

   *h. Press **Esc** to exit to the main BIOS screen.*

   *i. Select **Continue** and press **Enter** to continue the boot process.*

   The operating system installation starts.

   Notes:

   - *You must accept the operating system end-user-license agreement.*
   - *Once the operating system is available, eject the media to prevent a reboot to the CD-ROM.*

   At the end of the installation, you are logged on to the system as the administrator.

4.2. Attaching Certificate of Authenticity to Server

Refer to the Certificate of Authenticity (COA) instructions included on the notice that arrived with the Windows media to attach the COA to the server.

4.3. Installing Microsoft Hotfixes and Virus Protection Software

Install the customer-supplied Microsoft hotfixes and virus protection software on this partition at this time.

4.4. Configuring Internet Explorer Options

Perform these steps to set the Internet Explorer options required for Server Management software installation:

1. Launch Internet Explorer.
2. From Internet Explorer, click **Internet Options** on the **Tools** menu.

   The **Internet Options** dialog box appears.
3. Select the **Advanced** tab.
4. Scroll down, and under **Security**, select the **Allow active content from CDs to run on My Computer** check box.
5. Select the **Privacy** tab and verify that the **Block Pop-ups** check box under **Pop-up Blocker** is cleared.
6. Click **OK** to save these settings.

4.5. Installing ESMPRO Agent

Perform the following steps to install the Server Management software.

Notes:

- *Ensure that Internet Explorer is configured to allow active content from CDs to run.*

  Ensure that the pop-up blocker is disabled.

  These options are available from the Internet Options dialog box, on the Advanced and Privacy tabs, respectively. See the Internet Explorer Help for more information on how to configure these settings.
- *If prompted, select the option to allow blocked content.*

1. Use the *Utility CD* media to access the Server Utility. To manually launch the Server Utility, double-click the following file:

   ```
   (CD/DVD drive):¥mc.vbs
   ```

   Note: *As a result of Windows security, you must install this software directly from a CD-ROM or from a local drive; you cannot install the software from a network share*

or a mapped drive.

The **OS Select** dialog box is displayed.

Figure 4-1 OS Select Dialog Box

2. Type **1**, and click **OK**.

   Master Control Menu is displayed.

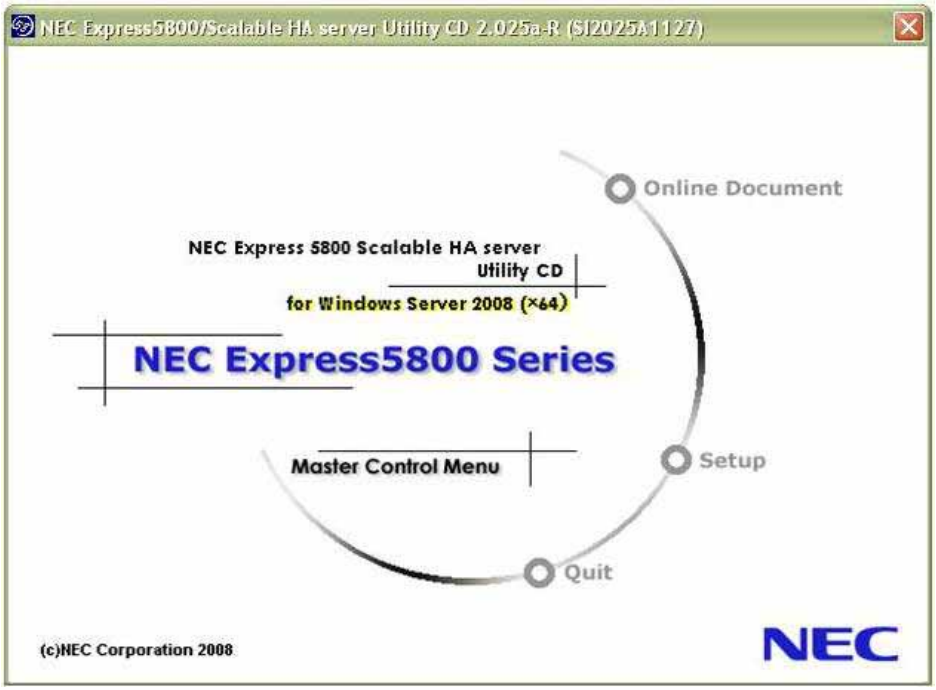


Figure 4-2 Master Control Menu Window for Windows Server 2008

3. Click **Setup**, and then click **NEC ESMPRO** on the pull down menu.

   ESMPRO setup window is displayed.

Figure 4-3 ESMPRO Setup Window

4. Click **Agent**.

   Installation starts.

5. When the installation is complete, click **Finished**, and click **End** on the **ESMPRO Setup Window** to close the setup program.

6. If you are prompted to reboot, click **Yes**.

4.6. Where To Go Next

If you have additional partitions to install and configure, refer to the section for the partition operating system you intend to install.

If you have completed software installation and configuration for all partitions and you are ready to finalize your system configuration, proceed to Section 8 Completing System Configuration.

Section 5

Red Hat Enterprise Linux 5.2 Partition Installation and Configuration

This section includes installation and configuration information for a partition intended to run the Red Hat Enterprise Linux 5.2 operating system.

5.1. Installing Red Hat Enterprise Linux 5.2 on a Partition

This section provides instructions for installing the Red Hat Enterprise Linux 5.2 (RHEL 5.2) operating system using the RHEL 5.2 CD-ROMs or the DVD. Use these instructions to perform a complete, basic installation of the operating system on the server.

Notes:

- *This installation procedure is complex. Familiarity with Linux installations is recommended. For optimal results, follow the directions in this text carefully.*
- *For custom installations and questions, see the Red Hat Enterprise Documentation Web site at www.redhat.com/docs. This site provides online versions of numerous Red Hat manuals. Select **Red Hat Enterprise Linux** from the list and click **Go** to access manuals specifically for Red Hat Enterprise Linux.*
- *Before you begin the installation, make sure that you have up-to-date backups of all data currently on your system. Some of the options available during the installation process overwrite all the information on the hard disk, including user data.*

The installation is performed in the following order:

1. Configure the partition.
2. Configure a partition boot adapter.
3. Install the operating system.
4. Configure and start IPMI heartbeat monitor services.
5. Install virus protection software.
6. Prepare to use a Xen Virtual Machine server.
7. Create a Xen Virtual Machine on the partition.

5.1.1. Configuring the Partition

Using remote console interface, configure the partition on which you intend to install the

operating system so that it includes at least the following components. Refer to the *User's Guide* for detailed instructions.

- Desired number of processors (minimum two)
- Desired memory (at least 4 GB)

Complete the steps in the following topics to configure the partition and install the operating system.

5.1.2. Configuring a Partition Boot Adapter

When the partition boots, it enters the phase in which manual configuration of individual adapter BIOS can occur.

If you intend to boot the partition from an external boot adapter to an external drive, perform the following steps:

1. Access the adapter BIOS.
2. Refer to the documentation for the adapter for configuration instructions.
3. After configuring the external boot adapter, reboot the partition from the remote console Web pages.

5.1.3. Installing the Red Hat Enterprise Linux 5.2 Operating System

Complete the following procedure to install the operating system:

1. Make sure to insert the *Red Hat Enterprise LINUX 5.2* CD-ROM 1 or DVD in the CD/DVD drive of the partition before starting the partition.
2. On the **boot:** line of the **RED HAT ENTERPRISE LINUX 5** screen, type **linux pci=use_crs**, and press **Enter** to perform the installation in graphical mode.
3. Perform one of the following steps on the **Welcome to Red Hat Enterprise Linux Server** screen.
4. If you want to test the media, press the spacebar.
5. If you do not want to test the media, press **Tab** to select **Skip**, and then press the spacebar.
6. On the **RED HAT ENTERPRISE LINUX 5** screen, click **Next**.
7. Select the language to be used for the installation, and then click **Next**.
8. Select the appropriate keyboard for the system, and then click **Next**.

   The **Installation Number** dialog box appears.
9. Select **Installation Number**, type your installation number, and then click **OK**.

   The system is checked for previously installed versions of the Red Hat Linux

operating system.

8. If one or more versions are found, select **Install Red Hat Enterprise Linux Server**, and click **Next**.
9. Partition your disks by performing the following steps:
   a. Select the action that the automatic partitioning process should take regarding existing partitions. NEC recommends that you select **Remove all partitions on selected drives and create default layout**.
   b. Select the drives to be used for this installation.
   c. Select whether you want to review and modify the partitions that are created by the automatic partitioning process, and then click **Next**.
   d. If you chose to remove Linux partitions or all partitions, a warning message appears. Click **Yes**.
   e. If you selected **Review and modify partitioning layout**, review or modify the partition configuration, and then click **Next**.
10. Optionally, select **Use a boot loader password**, type and confirm a boot loader password of your choice, and then click **OK**.
11. Click **Next**.
12. Set up the appropriate networking configuration values, and click **Next**.
13. Select the appropriate time zone. Click **System clock uses UTC** if appropriate, and then click **Next**.
14. Type and confirm a root password of your choice for the system, and then click **Next**.
15. Select the additional tasks you want your system to support. You must select **Customize now**. Then click **Next**.
16. Click **Base System then Base**, and **Optional packages**.
    a. Then scroll down and select the **OpenIPMI** check box if it is not already selected.
    b. Then scroll down, select the **kexec-tools** check box, and click **Close**.
    c. Then select the **System Tools** check box and click **Optional packages**.
    d. Then scroll down, select the **watchdog** check box, and click **Close**.
17. Add or remove the other packages as appropriate for your environment.
18. Click **Next**.

    Red Hat now checks for dependencies.
19. Click **Next** to begin the installation.
20. Do one of the following:

- If you are using DVD media, wait until a screen appears indicating that the installation is complete, and then click **Reboot**. The partition stops and then restarts.

  Remove the ejected CD-ROM or DVD from the CD/DVD drive.

- If you are using CD-ROM media, click **Continue** on the **Required Install Media** dialog box. The installation begins.

  You are directed to change CD-ROMs several times.

  After several minutes, when a screen appears indicating that the installation is complete, click **Reboot**. The partition stops and then restarts.

  Remove the ejected CD-ROM or DVD from the CD/DVD drive.

21. Click **Forward** on the **Welcome** screen.
22. Read the agreement, select **Yes, I agree to the License Agreement**, and then click **Forward**.
23. Select the appropriate firewall configuration values and click **Forward**.

    If you choose to enable the firewall, it is recommended that you select the **SSH** check box to enable the remote log-on process through the Secure Shell (SSH) protocol. This action allows remote terminal connections using the SSH protocol.
24. If you selected **Disabled** in the **Firewall** list in the previous step, a warning message appears. Click **Yes**.
25. Select the desired value from the **SELinux Setting** list, and click **Forward**.

    Setting this value to **Disabled** causes a warning message to be displayed indicating that the system needs to be rebooted after the installation completes. Answer **Yes** to the warning message to continue with the SELinux Setting value set to Disabled, or answer **No** and change the SELinux Setting value.
26. Click **Forward** on the **Kdump** screen.
27. Verify or modify the date and time, and then click **Forward**.
28. Perform one of the following steps:

    - If you want to register at this time, select **Yes, I prefer to register now**, and then click **Forward**.

      Complete the remaining steps.

    - If you want to register at a later time, select **No, I prefer to register at a later time**, and click **Forward**. Then click **No thanks, I'll connect later**. You do not need to complete the remaining steps.
29. Click **Forward** on the **Finish Updates Setup** screen.
30. If desired, type the appropriate information to create a new user account, and then click **Forward**.

31. Click **Forward** on the **Sound Card** screen.
32. On the **Additional CDs** screen, click **Finish**.
33. If a reboot dialog box appears, click **OK**.

    The initial installation is now complete and the system reboots. However, some additional configuration is necessary after the reboot.

5.1.4. Configuring and Starting IPMI Heartbeat Monitor Services for Red Hat Linux

The Intelligent Platform Management Interface (IPMI) heartbeat monitor ensures that the Linux partition reboots automatically if the operating system becomes unresponsive.

To configure and start the IPMI heartbeat monitor, perform the following:

1. Log on as the root user.
2. Use a text editor, such as vi editor, to open the /etc/sysconfig/ipmi file.
3. Locate the line containing the text **IPMI_WATCHDOG=no** and change it to **IPMI_WATCHDOG=yes**.
4. Save the file.
5. Use a text editor, such as vi editor, to open the /etc/watchdog.conf file.
6. Locate the line containing the text **#watchdog-device = /dev/watchdog** and uncomment the text by removing the pound sign (**#**) from the beginning of the line.
7. Save the file and exit the editor.
8. Type **chkconfig ipmi on** and press **Enter**.
9. Type **chkconfig watchdog on** and press **Enter**.
10. Type **/etc/init.d/ipmi start** and press **Enter**.
11. Type **/etc/init.d/watchdog start** and press **Enter**.

The system is now configured to reboot automatically if the operating system locks up and becomes unresponsive.

5.1.5. Installing Virus Protection Software

Install any customer-supplied virus protection software on this partition.

5.1.6. Preparing to Use a Xen Virtual Machine Server

If you want to use the server as a Xen Virtual Machine, do the following:

1. Edit the file /boot/grub/menu.lst as follows:
   a. Determine which title statement contains **Xen**.
   b. Change the value of the field named **default** to the value of the title statement containing **Xen** if the **default** field is not already set to that title statement value.

      The 0 (zero) value refers to the first title statement.
   c. Append **dom0_mem=1024M** to the kernel line for **Xen**.
2. Save the file.
3. Reboot the server to bring up the Xen kernel.

5.1.7. Creating a Xen Virtual Machine on the Partition

1. Log on with a user ID that has root privileges.
2. On the desktop, select **Applications**, then **System Tools**, and then **Virtual Machine Manager**.
3. On the **Virtual Machine Manager** window, select **File** and then **Open** connection.
4. On the **Open connection** menu, find the **Hypervisor** line, scroll down, and select **Xen**.
5. On the **Open connection** menu, find the **Connection** line, scroll down, and select **Local**.
6. Click **Connect**.
7. On the **Virtual Machine Manager** window, double-click **localhost** and then click **New**.
8. Follow the Red Hat steps displayed to create the virtual machine.
9. Ensure that the installation settings of the virtual machine, such as the virtual machine name, virtualization method, and memory, are correct.
10. Install the operating system of your choice.

5.2. Installing and Configuring ESMPRO Agent

Perform the following procedures to install the ESMPRO Agent on servers and partitions running Red Hat Linux operating system.

Prerequisites

Note: *To perform the following procedures, you must be an expert in administering Linux.*

Before beginning installation, ensure that you meet the following prerequisites for your operating system.

1. Review the following list of required packages. If any of the packages listed below are not currently installed, install them using the operating system media.
   - Red Hat Linux:
     - net-snmp
     - net-snmp-devel
     - net-snmp-utils
     - newt
     - newt-devel
     - portmap
     - slang
     - slang-devel
     - compat-libstdc++
2. Modify the snmpd.conf environment settings file to set the community privilege to **READ WRITE** as follows:
   a. Use a text editor, such as the vi editor, to open the snmpd.conf file. This file is located at

      ```
      /etc/snmp/snmpd.conf
      ```

   b. Set the community privilege to **READ WRITE**, if it is not already set. For example, remove the comment from the *rwcommunity admin* line.
   c. Exit the snmpd.conf file.
3. Enter the following command so that the snmpd service starts automatically:

   ```
   # /sbin/chkconfig snmpd on
   ```

4. Enter the following command so that the portmap service starts automatically:

   ```
   # /sbin/chkconfig portmap on
   ```

5. Execute the following command to start portmap:

   ```
   # /etc/init.d/portmap start
   ```

6. If the SELinux feature is enabled, perform the following steps:
   a. Enter the following commands to disable an snmpd limitation that conflicts with the SELinux feature:

      ```
      # setsebool -P snmpd_disable_trans 1
      # /etc/init.d/snmpd restart
      ```

b. Confirm that the SELinux feature is enabled by entering the sestatus command:

```
# sestatus -v
```

SELinux status: enabled

7. If you have a firewall or plan to enable a firewall, see Appendix A Firewall Considerations for a list of ports you should open.

Installation Procedure

Note: *In the following topic, the mount point is assumed to be "/media/dvd." Depending on your operating system version and drive type, you might need to substitute "/mnt" for "/media" and substitute "/cdrom" or the CD-ROM volume label for "/dvd."*

Perform the following steps:

1. Log on to the system as root.
2. Insert the Utility CD media into the CD/DVD drive.
   - If the CD-ROM does not mount automatically, enter the following command, as appropriate for your environment:

     ```
     # mount /media/dvd
     ```

   - Alternatively, navigate to the Computer window, right-click the CD-DVD drive, and then click **Mount Volume**.
3. If the CD-ROM does not mount with executable privileges, enter the following command:

   ```
   # mount -o,remount,exec /media/dvd
   ```

4. Move to the directory where the ESMPRO Agent package is stored:

   ```
   # cd /media/dvd/esmprosa/esmpro
   ```

5. Enter the following command to install the packages:

   ```
   # rpm –ivh Esmpro*
   ```

6. Enter the following command to unmount the CD-ROM, as appropriate for your environment:

   ```
   # umount /media/dvd
   ```

7. Confirm that the installation completed successfully by entering the following command:

   ```
   # rpm -qa | grep Esmpro-common
   ```

8. Configure the system information by entering the following commands:

   ```
   # cd /opt/nec/esmpro_sa/tools
   ```

```
# ./sethwinf
```

When prompted, set the product name, manufacturer, and chassis type.

9. Restart the software agent by entering the following commands:

```
# sync
# /opt/nec/esmpro_sa/bin/ESMRestart
```

5.3. Configuring Red Hat Linux 5.2 System Force Dumps

Before changing the configuration, determine a location in which the vmcore file (dump file) can be placed. This location can be another server, a RAW device, or a local file system that is approximately the size of the physical memory of the system.

Perform the following procedure as the root user:

1. Verify the kexec-tools package is installed by typing the following command:

```
rpm -q kexec-tools
```

2. If the kexec-tools package is not installed, install it on the partition.
3. Read through the kdump configuration file, and set the site-appropriate values for various parameters. Save the file, and exit.
4. Run the Kernel Dump Configuration utility by entering the following command:

```
system-config-kdump
```

5. Once the utility is started, perform the following steps:
   a. Select the **kdump** check box.
   b. Enter **512** for the **kdump memory** size.
   c. Configure the **Location** and **Path** boxes for the vmcore file.
   d. Click **OK**.
   e. Click **OK** to the system reboot message.
6. Reboot the system.

5.4. Where To Go Next

If you have additional partitions to install and configure, refer to the section for the partition operating system you intend to install.

If you have completed software installation and configuration for all partitions and you are ready to finalize your system configuration, proceed to Section 8 Completing System Configuration.

Section 6

SUSE Linux 10 SP2 Partition Installation and Configuration

This section includes installation and configuration information for a partition intended to run the SUSE Linux Enterprise Server 10 Service Pack 2 operating system.

6.1. Installing SUSE LINUX Enterprise Server 10 SP2 on a Partition

This section provides instructions for installing the SUSE LINUX Enterprise Server 10 Service Pack 2 (SLES 10 SP2) operating system using the SLES 10 SP2 CD-ROMs or DVD. Use these instructions to perform a complete, basic installation of the operating system on the server.

Notes:

- *This installation procedure is complex. Familiarity with Linux installations is recommended. For optimal results, follow the directions in these pages carefully.*
- *For custom installations and questions, see the SUSE LINUX Enterprise Server 10 SP2 documentation provided in the **docu** directory on the SLES 10 SP2 DVD or the first CD-ROM.*
- *Before you begin the installation, make sure that you have up-to-date backups of all data currently on your system. Some of the options available during the installation process overwrite all the information on the hard disk, including user data.*

The installation is performed in the following order:

1. Configure the partition
2. Install the operating system
3. Install the NEC drivers on the Linux partition

6.1.1. Configuring the Partition

Using remote console interface, configure the partition on which you intend to install the operating system so that it includes at least the following components. Refer to the *User's Guide* for detailed instructions.

- Desired number of processors (minimum two)

- Desired memory (at least 4 GB)

Complete the steps in the following two subsections to configure the partition.

6.1.2. Configuring a Partition Boot Adapter

When the partition boots, it enters the phase in which manual configuration of individual adapter BIOS can occur.

If you intend to boot the partition from an external boot adapter to an external drive, perform the following steps:

1. Access the adapter BIOS.
2. Refer to the documentation for the adapter for configuration instructions.
3. After configuring the external boot adapter, reboot the partition from the management firmware Web pages.

6.1.3. Installing the SUSE LINUX Enterprise Server 10 SP2 Operating System

1. Make sure to insert the SUSE LINUX Enterprise Server 10 Service Pack 2 CD-ROM 1 or DVD for the AMD64 and Intel EM64T (x86_64) version of the operating system in the CD/DVD drive of the partition before starting the partition.
2. As soon as the **Suse Linux Enterprise Server** screen with the boot/installation options appears, select **Installation**, on the **Boot Options** line enter **pci=use_crs**, and press **Enter**.

   Note: *This screen is timed and defaults to* ***Boot from Hard Disk*** *if you do not make a selection in time.*
3. After a few minutes, the **Language** screen appears.
4. Select the language you want to use and click **Next**.

   The **License Agreement** screen appears.
5. Read the agreement and click **Yes, I agree to the License Agreement** to accept the agreement.
6. Click **Next**.

   The **Installation Mode** screen appears.
7. Click **New installation** and then click **Next**.

   The **Clock and Time Zone** screen appears.
8. Perform any of the following steps that are appropriate for your situation:
   - Select the correct **Region** and **Time Zone** options.

- Select **Local Time** or **UTC** in the **Hardware Clock Set To** list.

  Note: *You can change the hardware clock time on the server to local time by performing this step. Use* ***hwclock–systohc*** *later to set the clock.*

- If the date or time is incorrect, click **Change** in the **Time and Date** box, make the changes, and click **Apply**.

9. Click **Next**.

   The installation continues to analyze your system. When finished, the **Installation Settings** screen appears with a list of installer default configurations.

10. If you want a hard drive layout other than the default layout that is suitable for basic use and testing, perform the following procedure. Before performing these steps, review the suggested partitions and file systems carefully; this type of configuration depends largely on the machine environment and intended usage.

    a. Click **Partitioning** on the **Change** menu.

    b. Select **Create Custom Partition Setup** and click **Next**.

    c. Select **Custom partitioning (for experts)** and click **Next**.

    d. Configure your partitions as required. Click **Finish** once the partitions are defined.

       Note: *NEC recommends that you create a minimum of two partitions. You need at least one swap partition. Its size depends on the intended server usage and the size of your hard drive. NEC recommends a maximum of 4 GB. A root (/) partition should define the remainder of the disk.*

11. Do the following to install the packages that are required to support force dumps and IPMI heartbeat monitoring:

    a. Click **Software** on the **Change** menu to change the software components.

    b. On the **Software Selection and System Tasks** window, click **Details**.

    c. Select **Search** on the **Filter** menu.

    d. Type **kdump** in the **Search** box, and then click **Search**.

    e. Select **kernel-kdump** in the right pane.

    f. Select **kdump**.

    g. Type **kexec-tools** in the **Search** box and then click **Search**.

    h. Select **kexec-tools** in the right pane.

    i. Type **heartbeat** in the **Search** box and then click **Search**.

    j. Select **heartbeat** in the right pane.

    k. Select **Patterns** on the **Filter** menu.

12. If you want to run Xen virtual machines on your system, in the left pane of the

Software Selection and System Tasks window, select **XEN Virtual Machine Host Server**.

13. Add or remove the other software components as appropriate for your environment.
14. Click **Accept**.
15. If a package that you want installed needs a license, then the appropriate one is displayed. Click **Accept**.
16. If you added a package that needs other packages to resolve dependencies, then a **Changed Packages** screen is displayed. Click **Continue**.
17. Click **Accept** to complete the installation settings.

    A **Confirm Installation** screen appears.
18. If necessary, go back and make changes before the installation process begins.
19. Once the installation settings are correct, click **Install**.

    The installation process begins.

    When the initial installation phase completes, the following message appears::

    ```
    Now booting your system.
    ```

    A 10-second countdown occurs.
20. Click **OK** or wait until the countdown completes.

    The partition stops and starts. You can remove the installation media from the CD/DVD drive.

    Note: *If you do not remove the DVD, the boot/installation options menu is displayed when the system boots. Allow the boot/installation options menu to default to* ***Boot from Hard Disk****.*

    When the installation process completes, the **Password for the System Administrator "root"** screen appears.
21. Type a password of your choice, confirm it, and click **Next**.

    The **Hostname and Domain Name** screen appears.
22. Type the name of the system and the domain name information, and click **Next**.

    The **Network Configuration** screen appears with a list of all detected network devices.

    This screen also provides VNC, firewall, and Proxy options.
23. Configure the network devices and other network options, as necessary, and click **Next**.

    The **Test Internet Connection** screen appears; the default action is to test the connection.
24. If you do not want to test the connection, click **No, Skip This Test** and click **Next**.

An **Installation Settings** screen appears.

25. Set the appropriate configuration values for CA management and the Open LDAP server, or click **Skip Configuration**, and then click **Next**.

    The **User Authentication Method** screen appears. This screen defines different methods of authentication. **Local (/etc/passwd)** is the default and is appropriate for most environments.

26. If necessary, select the appropriate method of authentication and click **Next.**

    The **New Local User** screen appears.

27. If necessary, type the appropriate values in the **User's Full Name**, **Username**, and **Password** boxes, and click **Next**.

    The SLES 10 SP2 release notes information appears.

28. Read the release notes and click **Next**.

    After checking for devices, such as graphic cards, printers, and sound cards, the **Hardware Configuration** screen appears with a list of the devices found.

29. Click **Next**.

    The **Installation Completed** screen appears.

30. If you do not want to save a copy of this configuration for autoyast, clear the **Clone This System for Autoyast** check box.

31. If you want to disable the ZMD service, select the **Disable ZMD Service** check box.

32. Click **Finish**.

33. Remove the CD-ROM or DVD from the CD/DVD drive.

6.1.4. Configuring and Starting IPMI Heartbeat Monitor Services for SUSE Linux

The IPMI heartbeat monitor ensures that the Linux partition reboots automatically if the operating system becomes unresponsive.

Perform the following as the root user:

1. Launch YaST using the main desktop menu.

   The YaST main panel appears.

2. Click **System**, then click **/etc/sysconfig Editor**.

   A new panel appears.

3. Click the **+** (plus sign) next to **Hardware**, and then click the **+** (plus sign) next to **IPMI** to expand the list of items.

4. Click **IPMI_WATCHDOG**.

5. In the **Setting of: IPMI_WATCHDOG** drop-down menu, change the setting to **Yes**, and then click **Finish**.
6. Click **OK**.
7. In the main YaST panel, click **Miscellaneous**, and then click **High Availability**.

   The **Heartbeat – Node Configuration** screen appears.
8. Click **Next**.

   The **Heartbeat – Authentication Keys** screen appears.
9. Click **Next**.

   The **Heartbeat – Media Configuration** screen appears.
10. Click **Next**.

    A warning appears, indicating that you need to configure redundant media. You can configure one path because the configuration is for heartbeat monitoring and you are not using clustering.
11. Click **Continue**.
12. On the **Heartbeat – Start-up Configuration** screen, set the **Booting** value to **On**, and then click **Finish**.

    The system restarts the service.
13. Close YaST.
14. Use a text editor, such as vi editor, to open the **/etc/ha.d/ha.cf** file.
15. At the end of the file, add the following line:

    ```
    watchdog /dev/watchdog
    ```
16. Save the file and exit the editor.
17. Launch YaST using the main desktop menu.

    The YaST main panel appears.
18. Click **System** and then **System Services (Runlevel)**.
19. Scroll down the services list, select the **ipmi** service, and then click **Enable**.

    A dialog box appears, indicating that additional services must be started.
20. Click **Continue** and all required services start.

    Note: *If a dialog box appears indicating some services were already started, click* ***OK****.*
21. Click **Finish**.
22. Click **Yes** in the dialog box indicating that changes will be saved.
23. Close YaST.

24. Open a terminal window and enter:

```
/etc/init.d/heartbeat restart
```

25. Close the terminal window.

The system is now configured to reboot automatically if the operating system locks up and becomes unresponsive.

6.1.5. Installing Virus Protection Software

Install any customer-supplied virus protection software on this partition.

6.1.6. Preparing to Use a Xen Virtual Machine Server

If you want to use the server as a Xen Virtual Machine, do the following:

1. Edit the file /boot/grub/menu.lst as follows:
   a. Determine which title statement contains **Xen**.
   b. Change the value of the field named **default** to the value of the title statement containing **Xen**.

      The 0 (zero) value refers to the first title statement.
   c. Append **dom0_mem=1024M** to the kernel line for **Xen**.
2. At the command-line interface, type **yast xen** or **yast2 xen**.

   The **Configuring the VM Server (domain 0)** screen appears.
3. Click **OK** in the **The machine is ready to start the VM server** box.
4. Reboot the server to bring up the Xen kernel.

6.1.7. Creating a Xen Virtual Machine on the Partition

1. At the command-line interface, type yast2.
2. Scroll down the page, and click Create Virtual Machines.
3. Click Forward.
4. Select a method for installing the operating system of the virtual machine.
5. Ensure that the installation settings of the virtual machine, such as the virtual machine name and memory, are set correctly.
6. Install the operating system of your choice.

6.2. Installing and Configuring ESMPRO Agent

Perform the following procedures to install the appropriate Server Management software on servers and partitions running SUSE Linux operating systems.

Prerequisites

Note: *To perform the following procedures, you must be an expert in administering Linux.*

Before beginning installation, ensure that you meet the following prerequisites for your operating system.

1. Review the following list of required packages. If any of the packages listed below are not currently installed, install them using the operating system media.
   - SUSE LINUX:
     - net-snmp
     - net-snmp-devel
     - newt
     - newt-devel
     - portmap
     - slang
     - slang-devel
     - compat-libstdc++

       Note: *The net-snmp and net-snmp-devel packages require a version higher than 5.1.3.1-0.13. The newt and newt-devel packages require a version higher than 0.51.6-5 but lower than 0.52.9.*
2. Modify the snmpd.conf environment settings file to set the community privilege to **READ WRITE** as follows:
   a. Use a text editor, such as the vi editor, to open the snmpd.conf file. This file is located at

      ```
      /etc/snmpd.conf
      ```

   b. Set the community privilege to **READ WRITE**, if it is not already set. For example, remove the comment from the *rwcommunity admin* line.
   c. Exit the snmpd.conf file.
3. Enter the following command so that the snmpd service starts automatically:

   ```
   # /sbin/chkconfig snmpd on
   ```

4. Enter the following command so that the portmap service starts automatically:

   ```
   # /sbin/chkconfig portmap on
   ```

5. Execute the following command to start portmap:

   ```
   # /etc/init.d/portmap start
   ```

6. If you have a firewall or plan to enable a firewall, see Appendix A Firewall Considerations for a list of ports you should open.

Installation Procedure

Note: *In the following topic, the mount point is assumed to be "/media/dvd." Depending on your operating system version and drive type, you might need to substitute "/mnt" for "/media" and substitute "/cdrom" or the CD-ROM volume label for "/dvd."*

Perform the following steps:

1. Log on to the system as root.
2. Insert the *Server Management Services Software* CD-ROM into the CD/DVD drive.
   - If the CD-ROM does not mount automatically, enter the following command, as appropriate for your environment:

     ```
     # mount /media/dvd
     ```

   - Alternatively, navigate to the Computer window, right-click the CD-DVD drive, and then click **Mount Volume**.
3. If the CD-ROM does not mount with executable privileges, enter the following command:

   ```
   # mount -o,remount,exec /media/dvd
   ```

4. Move to the directory where the ESMPRO Agent package is stored:

   ```
   # cd /media/dvd/esmprosa/esmpro
   ```

5. Enter the following command to install the packages:

   ```
   # rpm –ivh Esmpro*
   ```

6. Enter the following command to unmount the CD-ROM, as appropriate for your environment:

   ```
   # umount /media/dvd
   ```

7. Confirm that the installation completed successfully by entering the following command:

   ```
   # rpm -qa | grep Esmpro-common
   ```

8. Configure the system information by entering the following commands:

   ```
   # cd /opt/nec/esmpro_sa/tools
   ```

```
# ./sethwinf
```

When prompted, set the product name, manufacturer, and chassis type.

9. Restart the software agent by entering the following commands:

```
# sync
# /opt/nec/esmpro_sa/bin/ESMRestart
```

6.3. Configuring SUSE LINUX Enterprise Server 10 SP2 System Force Dumps

Before changing the configuration, ensure that the partition on which /var resides has enough disk space for the vmcore file. This is necessary because kdump stores kernel core dumps under /var, and the vmcore file is approximately the size of the physical memory of the system. You can change the location of the vmcore file by setting the **KDUMP_SAVEDIR** parameter in the /etc/sysconfig/kdump file.

Perform the following procedure as the root user:

1. Verify that the kernel-kdump and kexec-tools packages are installed by typing the following commands:

```
rpm -q kernel-kdump
rpm -q kexec-tools
rpm –q kdump
```

2. If the kernel-kdump or kexec-tools packages need to be installed, type either or both of the following commands as needed:

```
yast2 -i kernel-kdump
yast2 -i kexec-tools
yast2 –i kdump
```

3. Launch YaST using the main desktop menu.

   The YaST main panel appears.

4. Click **System** and then click **Kernel kdump**.
5. On the **Kdump Start-Up** screen
   a. Select **Enable Kdump**.
   b. Set **Kdump Memory** size to **512 MB**.
6. Click **Dump Filtering** and on the **Kdump – Dump Filtering** screen, set the values as desired.
7. Click **Dump Target** and on the **Dump Target** screen, set the values as desired.

8. Click **Expert Settings** and on the **Kdump Expert Settings** screen, set the values as desired.
9. Click **Accept**.

   A dialog box appears indicating a reboot is necessary to apply the changes.
10. Click **OK**.
11. Close YaST.
12. Reboot the system.

6.4. Where To Go Next

If you have additional partitions to install and configure, refer to the section for the partition operating system you intend to install.

If you have completed software installation and configuration for all partitions and you are ready to finalize your system configuration, proceed to Section 8 Completing System Configuration.

Section 7

VMware ESX Server 3.5 Partition Installation and Configuration

This section includes installation and configuration information for a partition intended to run the VMware ESX Server 3.5 operating system.

7.1. Installing VMware ESX Server on the Partition

1. On a workstation with Internet access, download the VMware ESX Server 3.5 software image file from the VMware Web site at www.vmware.com.
2. Write the software image file onto a blank CD-ROM or DVD-ROM.
3. Insert the CD-ROM or DVD-ROM containing the ESX Server software image into the partition CD/DVD drive.
4. Access the partition remote console Web pages:
   a. Type the current maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

      Note: *The current MLAN address is the IP address that you specified for the partition Service Processor setup. The MLAN address can also be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

      A log-on dialog box appears.

   b. Type a valid user name and password, and click **Log On**.

      Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

      Management firmware authenticates the credentials before displaying the requested remote console interface. The **Summary** page is displayed.
5. Click **Power Up/Down** to start the partition.

   A partition status window is displayed.
6. To view the partition desktop in on the same monitor display, perform the following steps:
   a. Click Remote **KVMS**.

      The **Keyboard Video Mouse Storage (KVMS) Redirection** page is displayed.

   b. Select a viewer option.

Note: *The Java client is recommended.*

For an initial use of the client viewer, you might need to install plug-ins or accept licenses to run the viewer.

The viewer window displays the partition desktop.

7. When the partition boots from the CD/DVD drive, a message is displayed asking you to test the CD/DVD image. The CD/DVD ISO image test confirms whether the ISO file was correctly downloaded from the VMware Web site.
8. Use the arrow keys to select **Skip** or **Test,** and press **Enter**.

   If you choose to initiate the test and the test succeeds, an OK message is displayed. Press **Enter** to dismiss the message. If the test fails, perform steps 1 through 5 of this procedure to download and create a new CD image, and attempt the installation again.
9. When asked to choose the installation interface mode, type **esx text** and press **Enter**.
10. Use the arrow keys to select your country, press **Tab** to select **OK**, and then press **Enter**.
11. Use the arrow keys to select the mouse type, press **Tab** to select **OK**, and then press **Enter**.
12. Use the arrow keys to select the installation type, press **Tab** to select **OK**, and then press **Enter**.
13. Accept the end-user license agreement by pressing the spacebar.

    An asterisk appears next to your selection.

    Press **Tab** to select **OK**, and then press **Enter**.
14. On the **Disk Partitioning Setup** screen, press the spacebar to select **Recommended**, press **Tab** to select **OK**, and then press **Enter**.
15. If a message appears asking you to confirm any changes to the partition, respond as follows:
    - To confirm the changes, press the left arrow key to select **Yes**.
    - To cancel the changes, press the right arrow key to select **No**.
16. Perform the following steps on the **Boot Loader Configuration** screens:
    a. Confirm the selection of the default drive, or use the arrow keys to select another drive. Then press **Tab** to select **OK**.
    b. If needed, type the information about special kernel options. Otherwise, leave these fields blank. Press **Tab** to select **OK**.
17. On the **Ethernet Selection** screen, confirm the default selection by pressing **Tab** to select **OK**.

18. On the **Network Configuration** screen, make your network selections.

    Note: *NEC recommends using a fixed IP address.*

    - If you want the partition network to use DHCP, press the spacebar to select **boot/dhcp**, and then press **Tab** to select **OK**.
    - If you want the partition network to use a fixed IP address, type the IP address, subnet mask, default gateway, primary DNS, and secondary DNS information.

      Then press **Tab** to select **OK**.

19. On the **Time Zone Selection** screen, press **Tab** to select **OK** and keep **system clock uses UTC** as the default setting. This recommended setting automatically accepts the time zone that is set on the system.
20. On the **Root Password** screen, type a new root (administrator) password for the VMware ESX Server. Type the password a second time to confirm it. Then press **Tab** to select **OK**.

    A message appears stating that the system is reading the package information. Then your selections and settings are displayed on the **Installation Ready to Begin** screen.
21. Press **Enter** to start the installation.

    When the installation is finished, the CD-ROM or DVD-ROM is automatically ejected from the partition CD/DVD drive.
22. Remove the media from the CD/DVD drive.
23. Press **Enter** to select **Finish**.

    The partition reboots.

7.2. Enabling Remote Root Connection

If you want to remotely connect to an ESX host, perform the following steps to enable the remote root ssh feature of ESX Server.

Note: *Remote root ssh access is disabled by default.*

1. Log on to the system as root.
2. Enter the following command to access the root ssh configuration file:

   ```
   vi /etc/ssh/sshd_config
   ```
3. Modify the PermitRootLogin flag by replacing **PermitRootLogin no** with **PermitRootLogin yes**.
4. To quit and save your changes, press **ESC**, type **:wq** and then press **Enter**.
5. Restart the ssh daemon service by entering the following command at the root prompt:

```
# service sshd restart
```

Messages indicate that the sshd service stops and restarts.

7.3. Building a VMware Infrastructure

Installing ESX Server on the partition is the first step in building a VMware Infrastructure. For more information about VMware Infrastructure and to install other VMware Infrastructure software components, refer to the VMware Infrastructure 3 Online Library at the following URL:

```
https://www.vmware.com/support/pubs/vi_pubs.html
```

This library includes installation, configuration, and administration manuals.

7.4. Installing VMware Patches

Updates and patches might be available for your VMware Infrastructure Components. For more information or to download patches, refer to the following URL:

```
http://support.vmware.com/selfsupport/download/
```

7.5. Installing and Configuring ESMPRO Agent

Perform the following procedures to install the appropriate ESMPRO Agent on servers and partitions running VMware ESX.

Prerequisites

Note: *To perform the following procedures, you must be an expert in administering VMware ESX.*

Before beginning installation, ensure that you meet the following prerequisites for your operating system.

1. Review the following list of required packages. If any of the packages listed below are not currently installed, install them using the operating system media.
    - VMware ESX
        - net-snmp
        - net-snmp-utils
        - newt
        - portmap
        - slang

- compat-libstdc++

2. Modify the snmpd.conf environment settings file to set the community privilege to **READ WRITE** as follows:
   a. Use a text editor, such as the vi editor, to open the snmpd.conf file. This file is located at

      ```
      /etc/snmp/snmpd.conf
      ```

   b. Set the community privilege to **READ WRITE**, if it is not already set. For example, remove the comment from the *rwcommunity admin* line.
   c. Exit the snmpd.conf file.
3. Enter the following command so that the snmpd service starts automatically:

   ```
   # /sbin/chkconfig snmpd on
   ```

4. Enter the following command so that the portmap service starts automatically:

   ```
   # /sbin/chkconfig portmap on
   ```

5. Execute the following command to start portmap:

   ```
   # /etc/init.d/portmap start
   ```

6. If you have a firewall or plan to enable a firewall, see Appendix A Firewall Considerations, for a list of ports you should open.

Installation Procedure

Note: *In the following topic, the mount point is assumed to be "/media/dvd." Depending on your operating system version and drive type, you might need to substitute "/mnt" for "/media" and substitute "/cdrom" or the CD-ROM volume label for "/dvd."*

Perform the following steps:

1. Log on to the system as root.
2. Insert the Server Management Services Software CD-ROM into the CD/DVD drive.
   - If the CD-ROM does not mount automatically, enter the following command, as appropriate for your environment:

     ```
     # mount /media/dvd
     ```

   - Alternatively, navigate to the Computer window, right-click the CD-DVD drive, and then click **Mount Volume**.
3. If the CD-ROM does not mount with executable privileges, enter the following command:

   ```
   # mount -o,remount,exec /media/dvd
   ```

4. Move to the directory where the ESMPRO Agent package is stored:

```
# cd /media/dvd/esmprosa/esmpro
```

5. Enter the following command to install the packages:

   ```
   # rpm –ivh Esmpro*
   ```

6. Enter the following command to unmount the CD-ROM, as appropriate for your environment:

   ```
   # umount /media/dvd
   ```

6. Confirm that the installation completed successfully by entering the following command:

   ```
   # rpm -qa | grep Esmpro-common
   ```

7. Configure the system information by entering the following commands:

   ```
   # cd /opt/nec/esmpro_sa/tools
   # ./sethwinf
   ```

   When prompted, set the product name, manufacturer, and chassis type.

8. Restart the software agent by entering the following commands:

   ```
   # sync
   # /opt/nec/esmpro_sa/bin/ESMRestart
   ```

7.6. Where To Go Next

If you have additional partitions to install and configure, refer to the section for the partition operating system you intend to install.

If you have completed software installation and configuration for all partitions and you are ready to finalize your system configuration, proceed to Section 8 Completing System Configuration.

Section 8

Completing System Configuration

Perform the procedures in this section to complete the system configuration.

8.1. Optional Workgroup and Domain Configuration

You can optionally change the default workgroup or assign domains for your servers and partitions. For instructions on completing these procedures, see the documentation included with your operating system.

8.2. Discovering Network Servers in ESMPRO Manager

Note: *The following procedure is only required for environments that include Express5800/A1160 systems.*

Discover the servers on your network in the ESMPRO Manager Operation Window using the autodiscover option on the management server, as follows:

1. On the **Start** menu of the management server, point to **Programs**, point to **NEC ESMPRO Manager**, and then click **NEC ESMPRO Manager**.

   The **Operation Window** appears.

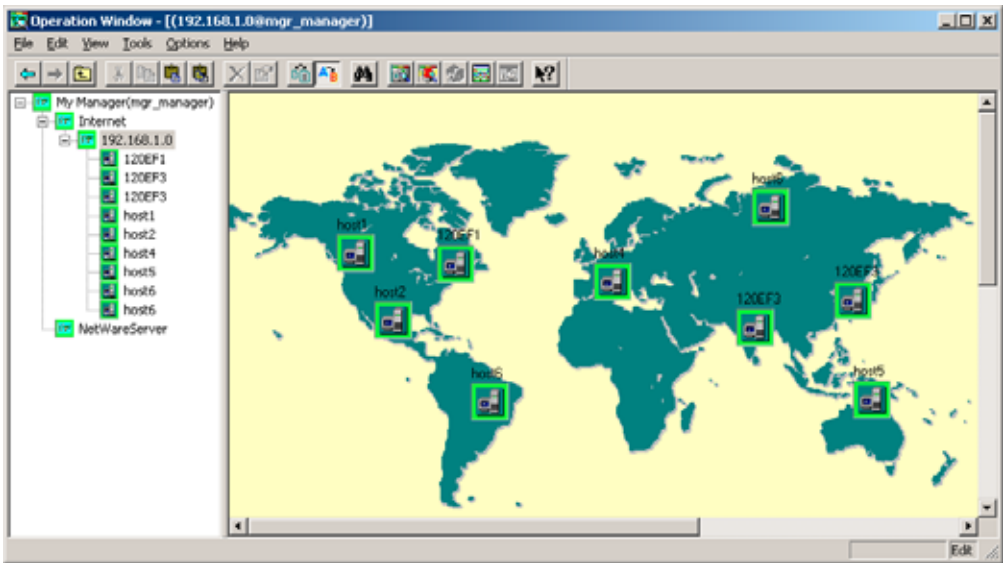


Figure 8-1 ESMPRO Operation Window

2. On the **Tools** menu, point to **Autodiscover**, point to **Foreground**, and then click **TCP/IP Hosts**.

   The **Autodiscover (TCP/IP Hosts)** dialog box appears.

3. Click an entry under the **Map** heading, and then click **Address**.

   The **Address** dialog box appears.

4. Ensure that **Address and Mask** is selected.

5. Type the IP address for your network in the **Network Address** box, and type the mask address for your network in the **Network Mask** box.

6. Click **OK**.

7. Ensure that the SNMP read-only community string is the same as the SNMP read-only community string you configured for other components in your environment.

8. Click **Start**.

The autodiscover utility discovers the servers on the specified network and populates the right pane of the Operation Window with those servers. This activity might take some time to complete.

8.3. Sending a System Remote Monitoring Test Packet

After a new system installation, sending a Remote Monitoring test packet ensures that the Remote Monitoring communication is working. This test verifies that event notification, Remote Monitoring packet generation, and packet delivery to the Support Center is operational.

For Express5800/A1160 systems, this verification is not conducted through an automated test. Instead, a manual procedure must be performed to generate an actual fault so that a Remote Monitoring packet is delivered to the Support Center. NEC interprets receipt of this initial Remote Monitoring packet as a Remote Monitoring test notification. The fault you are inducing in the following procedure is an intentional loss of AC power.

To perform this manual procedure, the system and system environment must meet specific conditions:

- The system must have AC redundancy.
- Both cell power supplies must be fully operational at the time that the fault is initiated.
- The partition or partitions must be installed, configured, operational, and in a running state.
- The management server must be running and operational, with the Remote

Monitoring Service operational and configured to send Remote Monitoring packets to the Support Center.

Note: *If your system does not meet all of the listed requirements, do not perform the procedure in this topic.*

Perform the following steps to generate a fault instance and send a Remote Monitoring RFU notification for your system:

1. From a partition cell, disconnect the AC power cord from bulk power supply #1.

   Within five minutes, a fault condition is reported as a Partition Fault event in the partition System Event Log (SEL).

2. Verify the fault is reported on the SEL by following these steps:

   a. Access the remote console Web pages.

      Type the maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

      Note: *The MLAN address can be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

      A log-on dialog box appears.

   b. Type a valid user name and password, and click Log On.

      Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

      Management firmware authenticates the credentials before displaying the requested Web interface. The **Summary** page is displayed.

   c. Click **Event Log** on the navigation pane to view the logged system events.

      Note: *The screen might not immediately refresh after an event occurs.*

   d. Refresh the information displayed by clicking on the Event Log screen.

3. Reconnect the AC power cord to the power supply.

   The Event Log reflects the AC power restoration and then displays the power supply is in an operational state.

8.4. Sending a Remote Monitoring Test Packet for Windows Partitions

Sending a Remote Monitoring test packet ensures that the Remote Monitoring communication is working and enables you to verify whether the test packet was received by the Support Center. On the management server, use the Internet connection (the recommended method) to send a Remote Monitoring test packet.

Perform the following steps on the management server to send the Remote Monitoring

RFU packet for each partition running a Windows operating system.

Note: *Skip this topic if your system contains partitions running only Linux operating systems or ESX Server.*

1. On the **Start** menu of the management server, point to **Programs**, point to **NEC ESMPRO Manager**, and then click **NEC ESMPRO Manager**.

   The **Operation Window** appears (Figure 8-1).

2. On the **Operation Window**, select **AlertViewer** from the **Tools** menu or the **AlertViewer** icon in the tool bar.

   The **AlertViewer Window** appears.

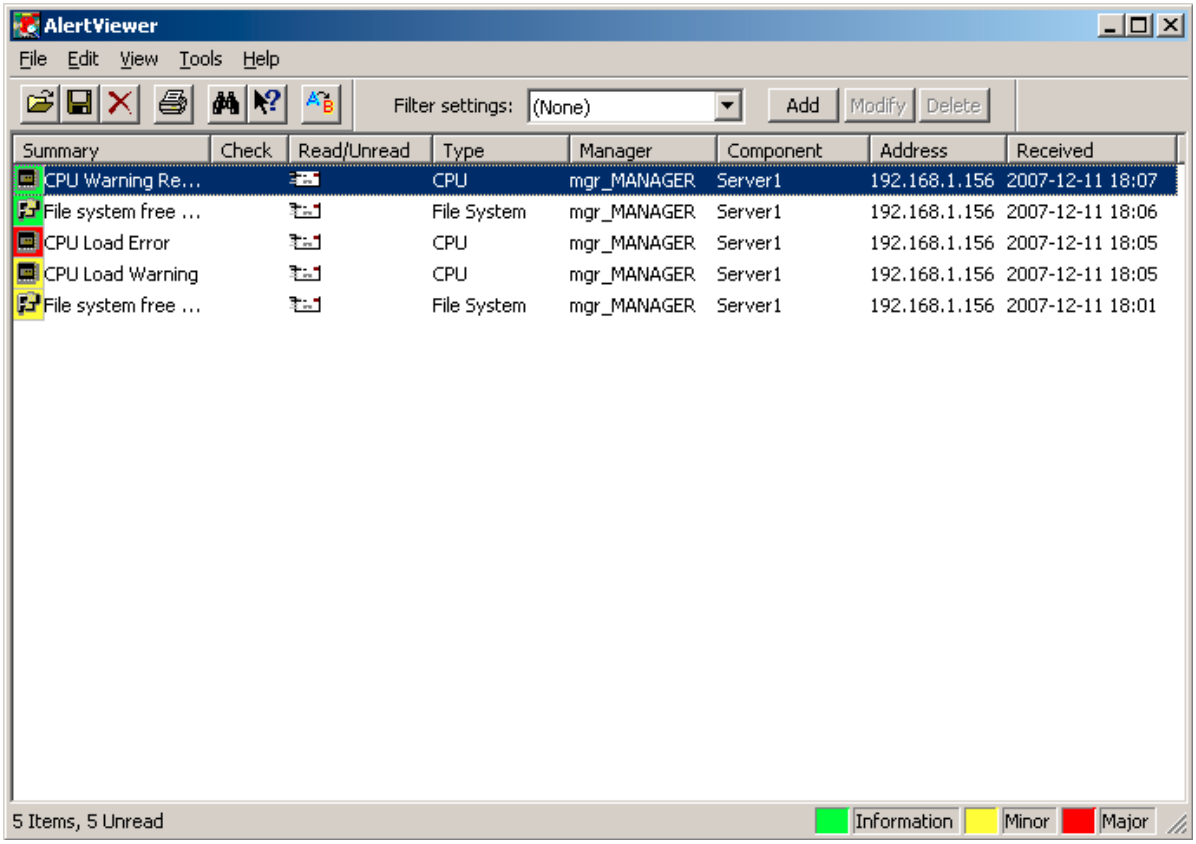

AlertViewer
File Edit View Tools Help
Filter settings: (None)
Add Modify Delete
Summary Check Read/Unread Type Manager Component Address Received
CPU Warning Re... CPU mgr_MANAGER Server1 192.168.1.156 2007-12-11 18:07
File system free ... File System mgr_MANAGER Server1 192.168.1.156 2007-12-11 18:06
CPU Load Error CPU mgr_MANAGER Server1 192.168.1.156 2007-12-11 18:05
CPU Load Warning CPU mgr_MANAGER Server1 192.168.1.156 2007-12-11 18:05
File system free ... File System mgr_MANAGER Server1 192.168.1.156 2007-12-11 18:01
5 Items, 5 Unread
Information
Minor
Major

Figure 8-2 AlertViewer Window

3. On the **AlertViewer Window**, select **Report Setting** on the **Tools** menu.

   The **Alert Manager Window** appears.

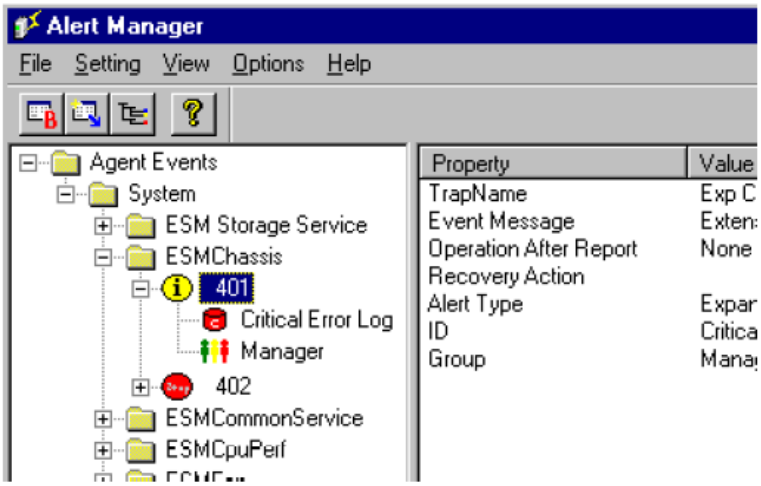
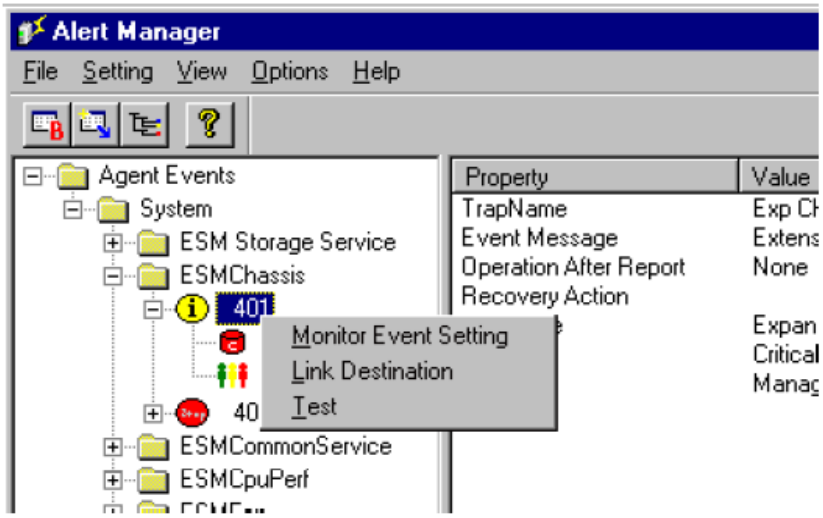


Figure 8-3 Alert Manager Window

4. On the **Alert Manager Window**, right-click a source or event, in the Tree View (left pane), to be tested, and click **Test** to execute test notification to the associated destination (normally support center).



4. Verify that the test packet was received by the NEC Support Center.

   If the packet does not transfer correctly, ensure that each software settings are configured correctly.

Appendix A
Firewall Considerations

Use the information in this appendix to configure any hardware or software firewall other than the Windows Firewall. If you use the Windows Firewall, Installation Assistant automatically configures the firewall for Server Management software.

A.1 Understanding Firewall Requirements

To ensure that Server Management software functions properly, configure your software or hardware firewall such that traffic is not blocked between system components where Server Management software is installed (for example, on a management server, on a managed server or partition, and on a client workstation).

Notes:

- *The firewall requirements are for incoming traffic except when otherwise stated; most outgoing traffic uses dynamic ephemeral ports, and these requirements are not documented.*
- *%Program Files% is a path variable to the file location, for example: C:¥Program Files¥.*

A.2 Firewall Requirements for Servers and Partitions You Want to Manage

Servers and Partitions Running Windows Operating Systems

The following firewall requirements apply to the Server Management software:

- Allow remote desktop connections.

  Traffic comes from client workstations.

- Allow file and print sharing.

  Traffic comes from client workstations.

- Allow a ping request for network diagnostics.
- Allow the ESMPRO Manager/Agent authenticated communication applications, or open TCP ports 8806 and 31134.

Note: *Default port values might have been overridden during installation. If the default values are not used, be sure to use the port values that were specified during*

installation.

Traffic comes from the Service Processor and from any management servers managing the server or partition. It might also come from client workstations.

- Allow the following application, or open SNMP and SNMP trap UDP ports 161 and 162:

  `%WINDOWS%¥system32¥snmp.exe`

  Traffic comes from localhost and management servers.

- Allow platform tools RPC traffic by opening TCP ports 7970 through 7989.

  Set the following registry keys under HKLM¥Software¥Microsoft¥RPC¥Internet:

  - Ports (REG_MULTI_SZ) = '7970-7989'
  - PortsInternetAvailable (REG_SZ) = 'Y'
  - UseInternetPorts (REG_SZ) = 'Y'

  Traffic comes from client workstations.

Servers and Partitions Running Windows, Linux, and VMware ESX Server

The following firewall requirements apply to the Server Management software:

Application	Item	Protocol	Port Number
ESMPRO Agent	ICMP Echo	ICMP	n/a
	Power On	UDP	10101
	ESMPRO Agent (Windows)	UDP	161
		TCP	One port from 1024 to 5000
	ESMPRO Agent (Linux)	UDP	161, 111
		TCP	One port from 32767 to 33000

Appendix B
Preparing for Partition Reinstallation

If you plan to reinstall the server operating system or change to a different server operating system, perform the procedures in this appendix to prepare a server for a new operating system installation.

After you complete this appendix, verify that you have all of the required media for your installation and continue to operating system installation sections.

B.1 Configuring Partitions for External Boot Capability (Optional)

If you do not need to configure the partition for external boot capability, skip this topic.

If you plan to boot to one or more external drives, and need to configure an external boot adapter for your partition, perform the following procedure to ensure that the partition owns the PCI slot the adapter is installed into:

1. Access the partition remote console Web pages.

   Type the maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

   Note: *The MLAN address can be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

   A log-on dialog box appears.

2. Type a valid user name and password, and click Log On.

   Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

   Management firmware authenticates the credentials before displaying the requested Web interface. The **Summary** page is displayed.

3. Click **Power Up/Down** to start the partition.

   A progress window appears showing the state of the partition.

4. To view the partition desktop in on the same monitor display, perform the following steps:

   a. Click **Remote KVMS**.

      The **Keyboard Video Mouse Storage (KVMS) Redirection** page is displayed.

   b. Select a viewer option.

Note: *If you are using the Firefox browser, select the Java client JViewer only.*

You might need to install plug-ins or accept licenses to run the viewer.

The viewer window displays the partition desktop.

5. When the partition desktop shows a notification that the BIOS is accessible, press the space bar to access the BIOS interface.

   In the BIOS interface, use the keyboard up and down arrow keys to navigate to the options on a screen, and press **Enter** to make a selection.

   The BIOS main screen is displayed.

6. View the status of the PCI slot used by the adapter, and ensure that **[Yes]** is selected.

   (The status of the PCI slot is displayed under **Expansion ROM** in the **Platform** category.)

7. Press **F10** to save your changes.
8. Press **Esc** to exit the **Expansion ROM** screen.
9. Press **Esc** to exit the **Platform** screen.
10. On the remote console Web pages **Summary** screen, click **Power Up/Down** to power down the partition.

B.2 Configuring BIOS Before Installing a Different Operating System On Partition

If you plan to install a different operating system on the partition, perform the following steps to ensure that the partition BIOS is set with the values or options required by the new operating system:

Note: *Skip this topic if you are reinstalling the same operating system on the partition, since the current BIOS settings should already be compatible with the operating system.*

1. Access the partition remote console Web pages.

   Type the maintenance LAN (MLAN) address of the partition or cell in a Web browser address box.

   Note: *The MLAN address can be viewed from the partition and cell EXPRESSSCOPE® Monitor LCD menus.*

   A log-on dialog box appears.

2. Type a valid user name and password, and click Log On.

   Note: *The default user name and password are* ***Administrator*** *and* ***Administer4Me****, respectively.*

Management firmware authenticates the credentials before displaying the requested Web interface. The **Summary** page is displayed.

3. If the partition is already running, click **Soft-Shutdown**.
4. Click **Power Up/Down** to start the partition.

   A partition status window is displayed.
5. To view the partition desktop on the same monitor display, perform the following steps:

   a. Click **Remote KVMS**.

      The **Keyboard Video Mouse Storage (KVMS) Redirection** page is displayed.

   b. Select a viewer option.

      Note: *If you are using the Firefox browser, select the Java client JViewer only.*

      For an initial use of the client viewer, you might need to install plug-ins or accept licenses to run the viewer.

      The viewer window displays the partition desktop.
6. When the partition desktop shows a notification that the BIOS is accessible, press the space bar to access the BIOS interface.

   In the BIOS interface, use the keyboard up and down arrow keys to navigate to the options on a screen, and press **Enter** to make a selection.

   The BIOS main screen is displayed.
7. Navigate to **BIOS Setup** and press **Enter**.

   The **BIOS Setup** screen is displayed.
8. Navigate to **Partition** and press **Enter**.

   The **Partition** screen is displayed.
9. Navigate to **OS Control** and press **Enter**.

   The **OS Control** screen is displayed.
10. Compare the settings on the screen against the required settings listed in Table B-1 for your operating system.

    Note: *The Windows Server 2003 x64 values in the table below are the default BIOS settings for a newly created partition or newly updated BIOS level.*

Table B-1 Required BIOS Setting for Partition Operating Systems

BIOS Setup OS Control	Windows 2003 x64	Windows 2003 x86	Windows 2008 x64	Linux	VMware ESX
USB Driver	Legacy	Legacy	Legacy	Legacy	Legacy
PCI Bus Segments	Disabled	Disabled	Enabled	Disabled	Disabled
MMIOH	Disabled	Disabled	Enabled	Disabled	Disabled
EFI OPROMs	Disabled	Disabled	Disabled	Disabled	Disabled
System Memory Limit	No limit	64 GB	No limit	No limit	128 or 256 GB

To change the value for a BIOS setting, navigate to the setting, and use the right or left arrow keys to change the value.

Note: *The PXE Boot setting is disabled by default and does not need to be changed for any operating system.*

11. When you are finished with your changes, press **F10** to save your changes.
12. Press **Esc** to exit the OS Control screen.
13. If you are installing VMware ESX on the partition, or are changing your operating system from VMware to something else, perform these additional steps:
    a. Navigate to **I/O Configuration** and press **Enter**
    b. On the I/O Configuration screen, navigate to **I/O Space Skip List**.

       If you are installing VMware ESX on this partition, change the value to **Disable**.

       If you had VMware ESX on the partition, and are reinstalling the partition with a different operating system, change the value to **Enable**.
    c. Press **F10** to save your changes.
    d. Press **Esc** to exit the **I/O Configuration** screen.
14. Press **Esc** to exit the **Partition** screen.
15. Press **Esc** to exit the **BIOS Setup** screen.
16. On the management firmware Web pages **Summary** screen, click **Power Up/Down** to power down the partition.

Appendix C

Configuring Internal Adapters (Partition Reinstallation Only)

When performing a partition reinstallation, use the information in this appendix to configure the RAID adapter that was shipped inside the partition, as needed.

C.1 Configuring the MegaRAID SAS Boot Adapter

The Express5800/A1160 system cell includes a hard disk riser capable of supporting up to six Serial Attached SCSI (SAS) drives and one optical device. The peripherals in the hard disk riser are connected through their respective interfaces to an integrated drive elctronics (IDE) port (for the optical device) or an SAS host bus adapter (HBA) for the disk drives.

The disk HBA currently supports five possible disk configurations:

- RAID0 for disk striping
- RAID1 for mirroring
- RAID5 for disk striping with distributed parity
- RAID10 for striped data across mirrored spans
- RAID50 for distributed parity with disk striping

The options provided by the HBA and disk drives enable you to customize your boot disk hardware to meet specific needs. For a configuration in which performance and resiliency are important considerations, the SAS disk drives running RAID1 should be used as the default boot solution.

The following are possible combinations for a hard disk and HBA configuration:

- RAID0 – One to six equivalent capacity disks (slots 0 and 1). Performance optimized. No protection.
- RAID1 – Two equivalent capacity disks. Failover protected.
- RAID1 – Three equivalent capacity disks. One disk is a dedicated hot spare. Failover protected
- RAID5 – Three to six equivalent capacity disks. Failover protected.
- RAID10 – Two sets of two equivalent capacity disks. Failover protected

- RAID50 – Two sets of three equivalent capacity disks. Failover protected

Notes:

1. *Only the SAS disk drive is supported for this release. Do not install 2.5-inch SATA disk drives in the cell.*
2. *Initial configuration is through the WebBIOS Configuration Utility during the boot sequence.*
3. *The reinstallation procedure for systems with partitions assumes some standard configuration settings, such as the number and sizes of boot disk partitions.*

C.1.1 Creating a RAID Array for the LSI SAS Adapter

If your partition contains a RAID adapter, perform the following procedure on the partition to create a RAID array for the drives on the partition cell:

1. Launch the WebBIOS Configuration Utility during the partition boot.

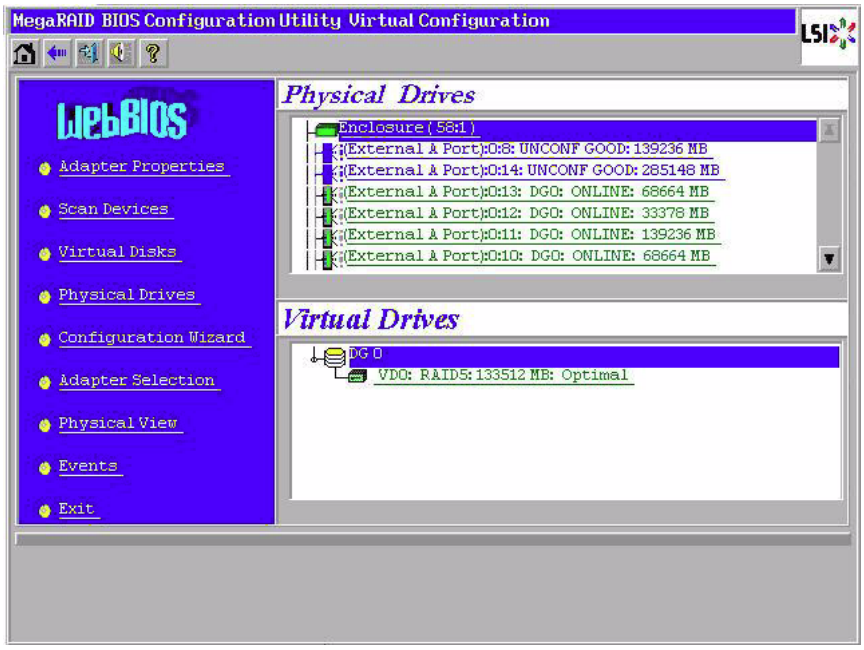
   When the host computer is booting, hold down the **Ctrl**+**H** keys until the **Entering setup** notification appears when the following text appears on the screen:

   ```
   Copyright© LSI Corporation
   Press <Ctrl><H> for WebBIOS
   ```

   The WebBIOS Configuration Utility is loaded.

2. Select the first SAS adapter on the list and click **Start**.

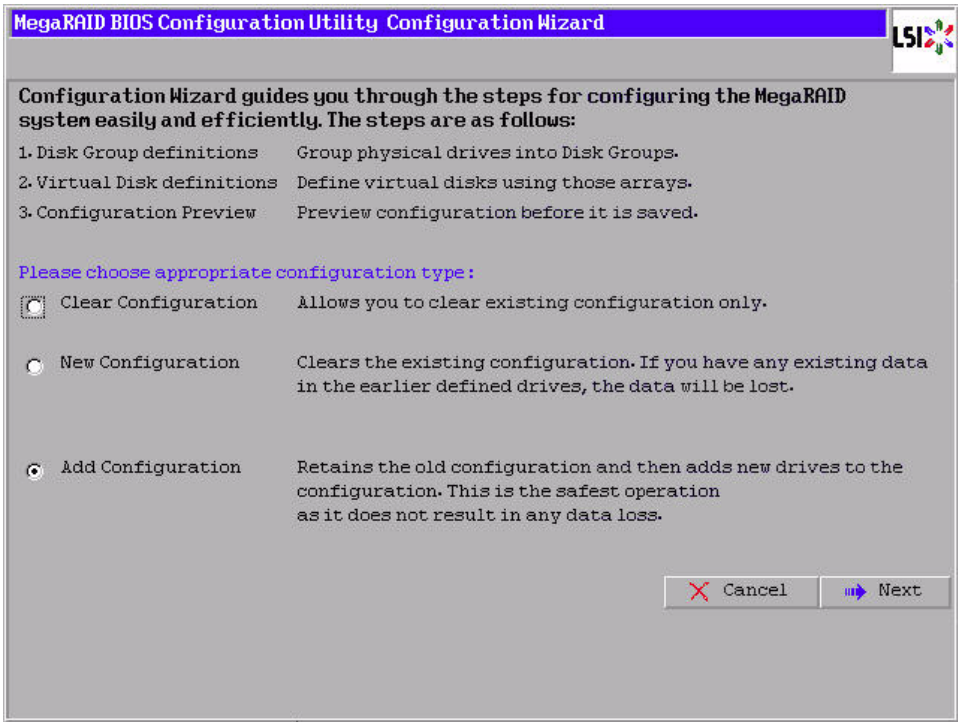
   The **MegaRAID BIOS Configuration Utility Virtual Configuration** screen appears.



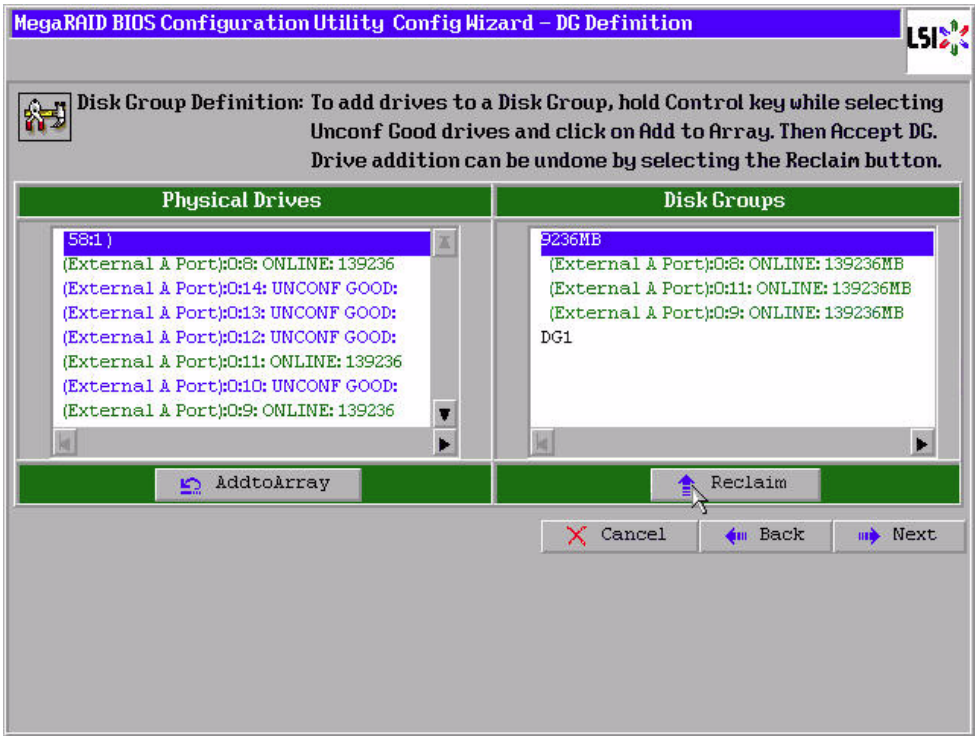
3. To ensure the Boot Support feature is enabled, perform the following steps:
   a. Select **Adapter properties** and then click **Next**.
   b. Ensure that **Adapter BIOS** is set to **Enabled**.

      If necessary, select **Enabled** from the list and click **Submit**.
4. Click **Configuration Wizard**.

   The **MegaRAID BIOS Configuration Utility Wizard** screen appears.


MegaRAID BIOS Configuration Utility Configuration Wizard
LSI
Configuration Wizard guides you through the steps for configuring the MegaRAID system easily and efficiently. The steps are as follows:
1. Disk Group definitions
Group physical drives into Disk Groups.
2. Virtual Disk definitions
Define virtual disks using those arrays.
3. Configuration Preview
Preview configuration before it is saved.
Please choose appropriate configuration type:
Clear Configuration
Allows you to clear existing configuration only.
New Configuration
Clears the existing configuration. If you have any existing data in the earlier defined drives, the data will be lost.
Add Configuration
Retains the old configuration and then adds new drives to the configuration. This is the safest operation as it does not result in any data loss.
Cancel
Next

5. Click **Next**.
6. Select **Custom Configuration** and then click **Next**. The **MegaRAID BIOS Configuration Utility Config Wizard – DG Definition** screen appears.


MegaRAID BIOS Configuration Utility Config Wizard – DG Definition
Disk Group Definition: To add drives to a Disk Group, hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept DG. Drive addition can be undone by selecting the Reclaim button.
Physical Drives
Disk Groups
58:1)
(External A Port):0:8: ONLINE: 139236
(External A Port):0:14: UNCONF GOOD:
(External A Port):0:13: UNCONF GOOD:
(External A Port):0:12: UNCONF GOOD:
(External A Port):0:11: ONLINE: 139236
(External A Port):0:10: UNCONF GOOD:
(External A Port):0:9: ONLINE: 139236
9236MB
(External A Port):0:8: ONLINE: 139236MB
(External A Port):0:11: ONLINE: 139236MB
(External A Port):0:9: ONLINE: 139236MB
DG1
AddtoArray
Reclaim
Cancel
Back
Next

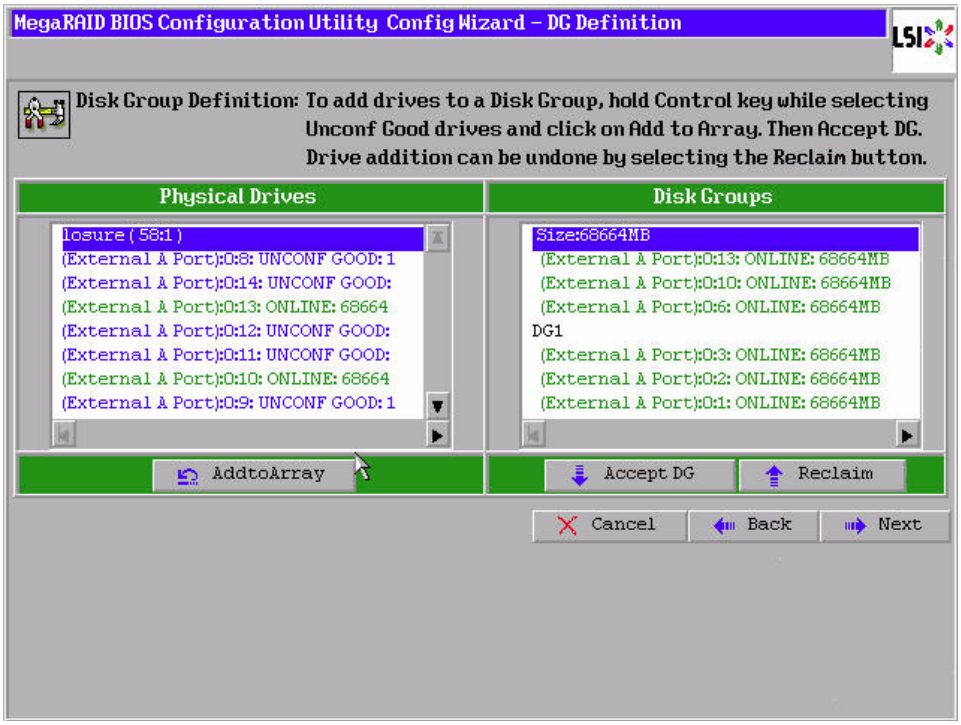
7. Select the first drive of the RAID1 array. Then, while pressing **Ctrl**, select the second drive for the RAID1 array, and click **AddtoArray**.

   The selected drives move to the **Disk Groups** column, under a disk group number.

8. Click **Accept DG**.

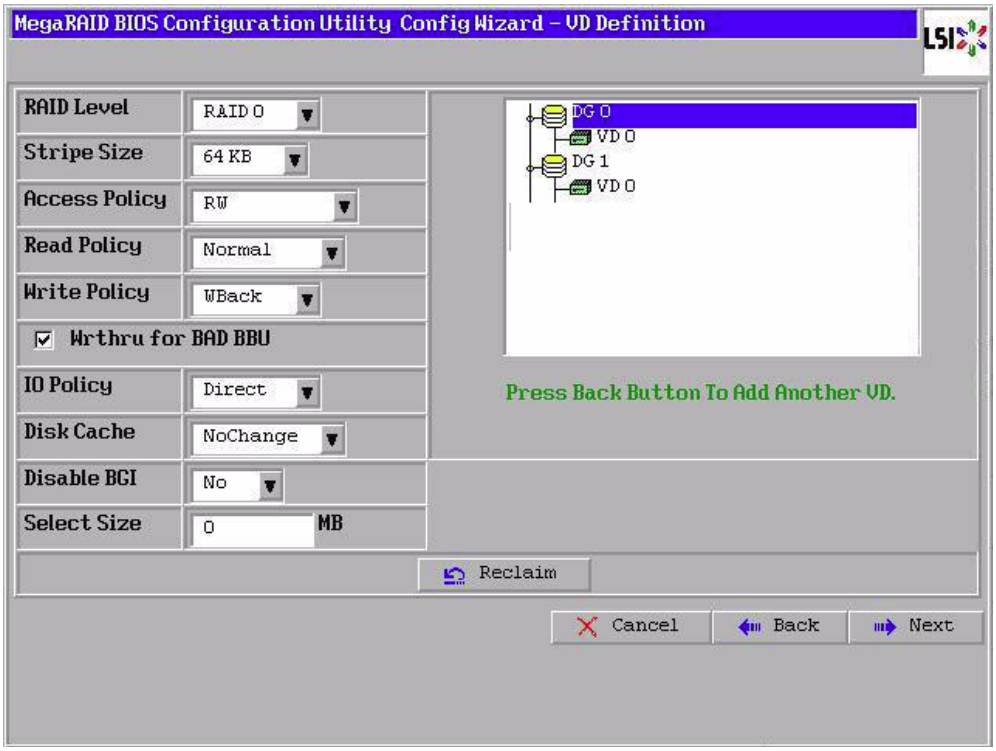
9. Click **Next**.

   The **Span Definition** screen of the MegaRAID BIOS Configuration Utility Config Wizard appears.


MegaRAID BIOS Configuration Utility Config Wizard – DG Definition
Disk Group Definition: To add drives to a Disk Group, hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept DG. Drive addition can be undone by selecting the Reclaim button.
Physical Drives
Disk Groups
losure (58:1)
(External A Port):0:8: UNCONF GOOD: 1
(External A Port):0:14: UNCONF GOOD:
(External A Port):0:13: ONLINE: 68664
(External A Port):0:12: UNCONF GOOD:
(External A Port):0:11: UNCONF GOOD:
(External A Port):0:10: ONLINE: 68664
(External A Port):0:9: UNCONF GOOD: 1
Size:68664MB
(External A Port):0:13: ONLINE: 68664MB
(External A Port):0:10: ONLINE: 68664MB
(External A Port):0:6: ONLINE: 68664MB
DG1
(External A Port):0:3: ONLINE: 68664MB
(External A Port):0:2: ONLINE: 68664MB
(External A Port):0:1: ONLINE: 68664MB
AddtoArray
Accept DG
Reclaim
Cancel
Back
Next

10. Select the disk group number and click **Add to Span**.
11. Click **Next**.

    The **MegaRAID BIOS Configuration Utility Config Wizard – VD Definition** screen appears.



The available RAID options (R0 or R1) for the number of drives and the two drive members are displayed.

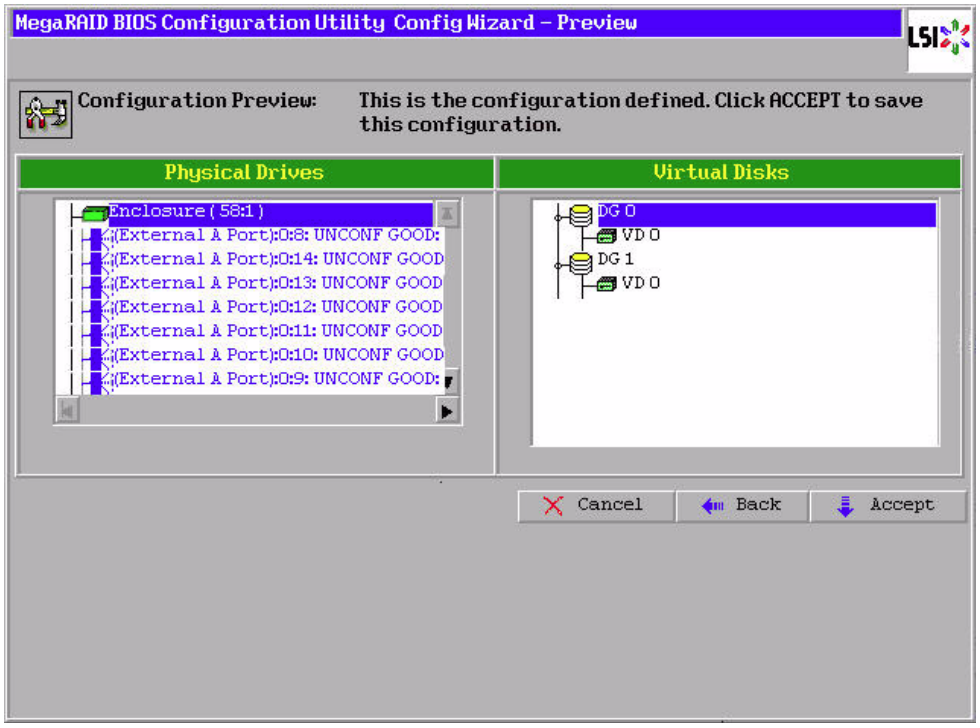
12. Make the following selections for virtual disk 0:

From the menu . . .	Select . . .
RAID Level	RAID1
Read Policy	ADAPTIVE
Write Policy	WBACK
IO Policy	CACHED

In the **Select Size** box, type the R1 value defined in the **Configuration** column.

13. Click **Accept**.
14. Click **Next**.

The **MegaRAID BIOS Configuration Utility Config Wizard – Preview** screen appears.



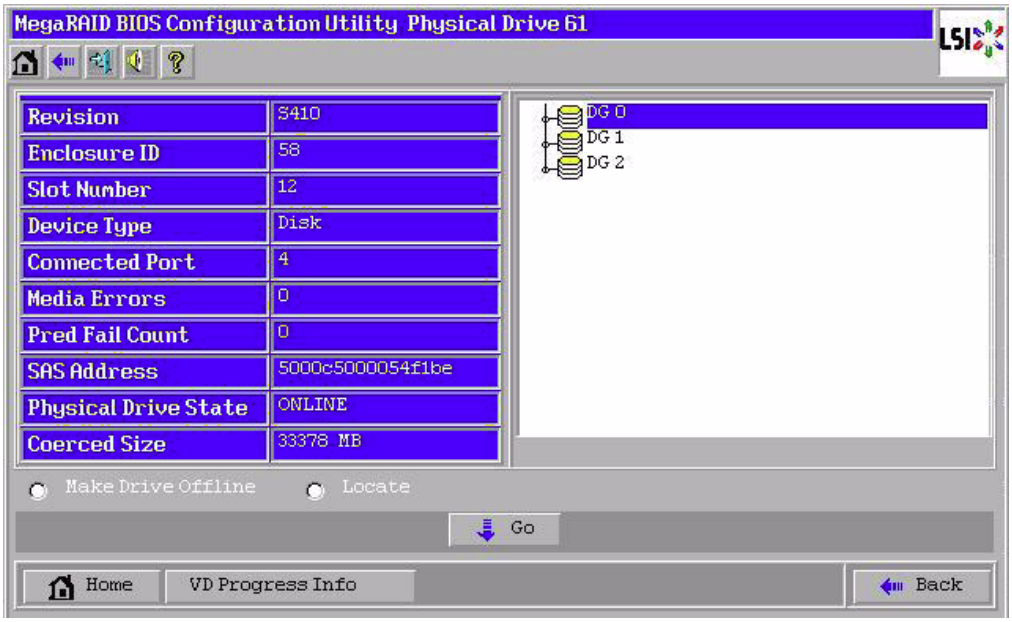
15. In the **Virtual Disk** column, verify that the RAID1 configuration information you submitted earlier is correct.
16. If the information is correct, click **Accept**.
17. If the information is incorrect, click **Back** to return to the previous VD Definition screen and make any needed adjustments. Click **Accept** to save your changes, and click **Accept** again after you verify the information is correct.
18. When the **MegaRAID BIOS Configuration Utility Confirm Page** screen appears, click **Yes**.

    Note: *All previous data on the new virtual disk is lost once you initialize the disk.*
19. Click **Yes** to initialize the disk.

    After initialization, the RAID1 array displays an **Optimal** status.
20. Click **Home** to return to the main menu screen. The new RAID1 array appears under **Virtual Disk**.
21. To configure a dedicated hot spare for the array, click an available drive listed under Physical Drives.

    Note: *The drive must be of equal or greater capacity to the array drives.*

    The **MegaRAID BIOS Configuration Utility Physical Drive <identifier>** screen appears.



22. Select **Make dedicated HSP** and click **Go**.

    The drive state changes to **DED hotspare**.

23. Click **Home** to return to the main menu screen.

    Perform steps 21 and 22 to configure any additional drives, if needed.

24. If the configuration is complete, click **Exit**, and then click **Yes** to confirm that you want to exit the utility.

25. Reboot the partition.

Appendix D

Enterprise Servers Security Notice

The default security settings on this server may be inadequate for your environment. In addition, security vulnerabilities may have been discovered after this software was released. NEC MAKES NO CLAIM OR WARRANTY THAT YOUR SYSTEM IS SECURE AS DELIVERED.

Before you connect this server to a network, review the security requirements of your applications, data, and environment. On Express5800/A1160 server, be sure to evaluate the operating system on the Service Processor(s) as well as each partition's operating system. After evaluating your system, implement an appropriate security policy for each environment.

Systems with Web services installed, such as Microsoft Internet Information Services (IIS), may require added security considerations. You should be aware that IIS components are installed on the Service Processors of the Express5800/A1160 server. This should be taken into account in performing your security review.

Note: *Review your security policy and current information on security vulnerabilities on a continuing basis and update your system as appropriate.*

D.1 Microsoft Operating Systems

Microsoft provides security information on the Web site

```
http://www.microsoft.com/technet/security/default.mspx
```

NEC recommends that you register to automatically receive the Microsoft Security Newsletter and the Microsoft Security Notification Service.

D.2 Windows Hotfixes

Installation of Microsoft hotfixes does not affect the conformance of a system to a Datacenter-certified configuration, even if kernel mode components are updated.

Installation of a new Windows Service Pack requires migration to a new certified configuration, which includes that Service Pack.

D.3 Linux

If you are using Linux, operating system, check the Web site appropriate to your version

and register for security notices and updates.

D.4 VMware ESX

VMware provides security information on the following Web site

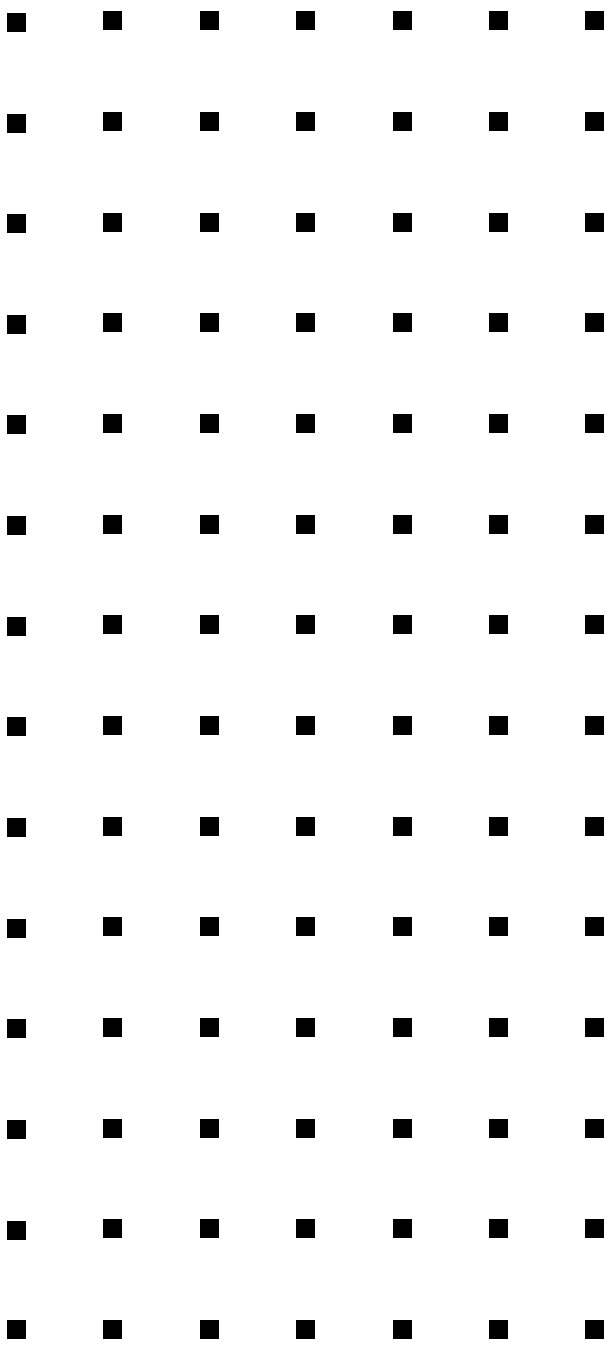
```
http://www.vmware.com/security/
```

NEC recommends that you register to receive the VMware security advisories and alerts.

Note:

Consumers are cautioned that Product performance is affected by system configuration, software, the application, Customer data, and operator control of the system, among other factors. While NEC Corporation of America products is considered to be compatible with many systems, the specific functional implementation by the Customers of the product may vary.

Therefore, the suitability of a product for a specific purpose or application must be determined by the Customer and is not warranted by NEC Corporation of America. For more information, telephone **1-866-269-1239**



456-01806-000